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SETTLEMENT OF THE MEXICO-GUATEMALA BOUNDARY QUESTION.

1882.

The boundary question between Mexico and Guatemala, which had been pending for nearly sixty years, with constant danger of a collision between the two interested countries, was settled on the 12th of August, 1882, by an agreement signed in the City of New York by myself on behalf of Mexico, and General J. Rufino Barrios, as President of Guatemala and on her behalf, specially authorized thereto by the Congress of that country, although the final boundary treaty was signed in the City of Mexico on September 27th, 1882.

I am, therefore, in possession of facts which would be lost if I did not record them, and which, with the object of assisting the integrity of that event's history, I think it my duty to relate; and such is the purpose of this paper.

I shall be guided in my narrative by my personal recollections, aided by official records, since, being in the habit of reporting minutely to my Government every incident of my public life while in Washington, I have what is substantially a diary of all my transactions and even of my thoughts and views, written at the time when the events happened, without any effort to give them a coloring that would make them serve any personal or political purpose.

Besides which, when General Barrios returned to his country, after having signed the New York agreement, he sent a message to the Guatemalan Congress on December 1, 1882, submitting for its approval the final boundary treaty, in which he reported minutely all that had taken place in his negotiations while in the United States, and a comparison of both reports establishes the correctness of my narrative.

I shall quote, too, passages from the official papers transmitted to the House of Representatives by President Arthur, with his message of May 6, 1884, in answer to a call for information on that subject.*

• I. PERSONAL RELATIONS WITH GENERAL BARRIOS.

But before entering into the details of this subject, in order to enable the reader better to understand clearly my narrative of events, it will be necessary for me to give some idea of the nature of my personal relations with General Barrios, previous to the negotiations which culminated in the agreement signed by us in New York.

The office of Secretary of the Treasury of Mexico was, until recently, the most difficult of administration, because, the Federal Treasury being in a state of chronic bankruptcy, it was impossible to pay on demand all its obligations, and the Secretary had to distribute the daily receipts in the best way he could; so that all creditors presented their claims to him, thus placing in his hands almost all the details of that office, which, added to several other causes, too numerous to specify here, increased considerably the Secretary's labors. Therefore, a hard-working and conscientious man, holding that office, had to work 18 hours every day, as long as he was able to do so, and that at a place nearly 8,000 feet above the level of the sea, where the decreased atmospheric pressure seriously affects the nervous system, and does not permit of prolonged and constant mental labor.

I remember that the Emperor Napoleon, believing, during the French intervention, and while Maximilian was in Mexico, that there was no Mexican capable of managing the finances of the country, sent to Mexico, for that purpose, two French officials, who were doubtless expert financiers, and who, being naturally very anxious to please Napoleon, expecting promotion at home if successful, worked very hard to satisfy him, with the result that after a few months one of them, M. Bonnefons, returned home very sick and soon afterward died, and his successor, M. Mantenant, returned to France insane. I have had occasion to notice that even young and strong men suffer severely after a few months of prolonged mental work, from what Mexican doctors call brain anæmia, and which, if the patient does not cease working or leave the city, generally has an early and fatal termination.

After having worked very hard in Washington during the French

* Executive Document No. 154, 48th Congress, 1st Session, House of Representatives.

intervention in Mexico, from 1861 to 1867, as the official representative of my country, I was called by President Juarez, on my return home on the 15th of January, 1868, to the Treasury Department, and I remained in that office up to June 10, 1872, working as hard if not harder than any of my predecessors, so that I am surprised that I did not succumb to the severity of my labors. It is true I was then young, and, owing to my regular habits, I was physically vigorous; but the labor imposed upon me was enough to kill anybody. In the early part of 1872, I could not sleep, nor digest and assimilate my food, and altogether I was in such a condition that a few months more of such work would certainly have ended my life. I found myself under the necessity, therefore, of retiring from the Cabinet, which I did, availing myself of the close of the session of the Mexican Congress, especially dedicated to approve the appropriations for the following fiscal year and to vote the taxes to defray them. I also desired to afford President Juarez an opportunity to appoint new men to his Cabinet, as he had inaugurated a new Presidential term on the 1st of December, 1871, and it was customary to make on such occasions a total or partial change of Cabinet.

I realized that to restore my health it would be necessary for me to lead for some years a hygienic life and to avoid excessive mental labor, and as this would not have been possible had I remained in the City of Mexico, I made up my mind to live in the country, devoting my time and energies to agricultural pursuits, since, having no fortune, I had to earn my living by my own work. I visited several desirable places in Mexico, and finally decided to settle in a place quite remote from the Capital, because I did not desire to return to public life, for which I had never had any inclination. I selected the town of Tapachula, the county seat of the District of Soconusco, in the State of Chiapas, adjoining Guatemala, located on the Pacific slope, because it was one of fine agricultural resources and of great promise; and, early in 1873, I settled there, bought some public land and started a coffee plantation in the high lands, and one of india rubber in the low ones, and did some commercial business, buying coffee for export, and importing agricultural implements and commodities.

Although Mexico had been in possession of Chiapas for over fifty years, and it was as much a Mexican State as any State here is one of the United States of America, Guatemala claimed that Chiapas, and more especially Soconusco, rightfully belonged to her.

Public men in Guatemala are in general very suspicious, and especially were they so when Mexico was concerned, and when they

saw me living as a farmer in a very humble frontier town adjoining their country, they imagined that I must have some hostile designs against Guatemala, and that my farming was only a pretence to cover my hidden designs. General J. Rufino Barrios became President very soon after I settled in Soconusco, and he, as well as most of the persons around him, thought that I had gone there either with the purpose of attempting to make myself dictator or ruler of Guatemala, or to work for the annexation of that country to Mexico, which had been for some time the great bugbear of Guatemalan statesmen. Judging by what they had sometimes seen in their own country, they imagined that a man who had been Secretary of the Treasury of Mexico for five years, was or ought to be a millionaire, and consequently they thought it an absurd idea that he should try to earn his living by honest labor.

Although I had been warned of this danger, I did not at the time fully realize its gravity, because I did not know how suspicious of Mexico and how hostile to her the people of Guatemala were, and I tried to allay their fears by going myself to the City of Guatemala to make the acquaintance of its public men and to inform them of my reasons for having settled in Soconusco, and of my purposes for the future; but, judging me by the standard of their own views and principles, as it is natural for people to do, this act of mine very probably only served to confirm them in their suspicions.

General Barrios himself, whom I met in the City of Guatemala and who soon afterwards became President, treated me with the greatest duplicity. At the same time that he pretended to be a friend of mine, and in some things acted as such, probably in order the better to deceive me by inspiring me with confidence in his sincerity,—as when he sent me his power of attorney, authorizing me to draw upon his funds in bank and attend to his private affairs, especially to a farm he had in Soconusco,—he actually believed me to be his rival, and therefore his worst enemy, and he did all he could against my person and my property, but always in an underhand manner, so as not to appear personally responsible.

The most charitable construction I can put on General Barrios' conduct toward me is that, when I first arrived in Soconusco, although distrusting me, he perhaps still desired to maintain friendly relations with me, but that certain occurrences which afterwards took place contributed to make him give credence to the suggestions of those around him, specially Señor Don José María Samayoa, as I was afterwards informed, and who at that time wielded great influence, that I was conspiring against himself and his country.

The occurrences to which I allude were very displeasing to General Barrios, because he did not understand well the Mexican laws and institutions, and he made me altogether responsible for them, notwithstanding that I knew nothing whatever about some of them until after they had taken place, and that I did all in my power to prevent others, although without success, because I was living in Soconusco as a private citizen, and was clothed with no authority or power of any kind whatsoever. It would take too long to mention here all the occurrences which then took place, and I will only say that the main one was the unfortunate rebellion and invasion of Guatemala, by a portion of the Federal forces, which, at my request, had been sent to Tapachula by the Federal Government of Mexico, notwithstanding that nobody was exposed to greater dangers than myself on account of that event. It would have been worse than madness on my part, to place myself in General Barrios' power, as I often did while I was conspiring against him, and in any case it would have been folly for me to do so, not being a Guatemalan citizen. Had I desired power and political position, I had at home a more ample and legitimate field than Guatemala could afford to my supposed ambition.

It would divert me from my purpose to enter into more details, and I will only say that General Barrios, while acting toward me as a friend, instructed his official representative at the City of Mexico, early in 1875, to accuse me to the Mexican Government of many offences of the gravest character, which he claimed I had committed against Guatemala, and to demand that I should be removed from the frontier, because my presence there, he said, was a menace to the peace of that country.*

All this culminated in a rebellion against the constitutional Government of Mexico, organized in Guatemala in 1876, and of course with the knowledge and support of General Barrios, by Sebastian Escobar, who had been for many years the tyrant of Soconusco and who fled to Guatemala after the arrival in that district of the

* In a paper I have written entitled "The United States and the Boundary Question between Guatemala and Mexico," not published yet, I have made the following estimate of the public services of General Barrios :

"General Barrios was a most remarkable man. While he ruled Guatemala with an iron hand and did many things which would mark him as a tyrant of the worst kind, ignoring completely the rights of the people and especially of the higher classes, he had some remarkable traits of character which enabled him to accomplish a great deal of good for his country during his rule. He had an indomitable will, and it was his greatest desire to promote education and public improvements, and especially to destroy the power of the Church or conservative party, which was then in Guatemala as great as it had ever been in Mexico ; and this explains why he never lost an opportunity to humiliate the higher classes. The time has not yet come to pass an impartial judgment on his administration, but while he had a great many faults, I think he had also many redeeming qualities."

Federal troops, when the best elements of the population of Tapachula formed themselves into an organization to recover their rights, which Escobar had usurped. Escobar did not himself invade Soconusco, but sent his men with instructions to shoot his antagonists, who were the most prominent persons in Tapachula, and me first of all, because he held me responsible for the sending of the Federal troops and his consequent loss of power. The arrival at the port of San Benito of a Mexican man-of-war, in which I took passage for Acapulco, *en route* for the City of Mexico, as I had been elected a member of Congress for that district, prevented Escobar from carrying out his plans in so far as I was concerned. Had I waited for the regular Pacific Mail steamer, which was due two or three days later, I should certainly have been caught and shot as a bandit unless, indeed, my presence in Tapachula might have contributed to the organizing of an effective resistance, and so changed the result of the revolutionary movement. Although General Barrios could not be held directly responsible for the intended crime, I have no doubt that he knew and approved of it, and that, in the condition of our relations, my escape was a great disappointment to him.

Of course, knowing that nothing was done in Guatemala without instructions from General Barrios, I could not help suspecting that he was the author of the several hostile acts committed against me by the Guatemalan authorities on the frontier which would take too long to mention; but I could not hold him directly responsible for these acts, because, having informed him in detail of them all, he not only disclaimed all knowledge of them, but pretended that he had given orders that such acts should not be repeated; and I had some doubts whether his agents had not gone beyond his instructions. Sometimes I even hoped that he might see the injustice of his conduct toward me and change it for a more friendly one. For these reasons I refrained from coming to an open rupture with him; but of course when I knew of the charges he had made against me, while he pretended to be my friend, I could no longer entertain any doubts on the subject, nor continue any longer, with any self-respect, the system of forbearance and conciliation which I had been pursuing.

When Señor Lafragua, Secretary of Foreign Affairs of the Mexican Government, informed me, in April, 1876, of the charges made against me by the Guatemalan Minister, I fully perceived the position in which I had been placed, and realized that I could not remain in Soconusco any longer without danger of assassination, and I was obliged, therefore, to abandon and so lose a fortune I

had accumulated there by three years of labor. At the same time I thought it my duty to state in self-defence all that had taken place between General Barrios and myself, while I was in Soconusco, and in doing so I had to present him to the public as he really was, that is, as a false, disloyal and unscrupulous man. I wrote in August, 1876, a statement which assumed almost the size of a book* in answer to the charges made against me, corroborating with ample proof every assertion I made, and my answer was printed by the Mexican Government as a paper annexed to the report of the Secretary of Foreign Affairs. General Barrios had the good sense not to try to contradict anything I had said, and of course after that I had nothing more to do with him.

Such was the condition of my relations with General Barrios when the Mexican Government sent me for the second time to Washington, as the official representative of Mexico, in February, 1882, and when the events I propose to narrate in this paper took place.

II.—NEGOTIATIONS WITH SEÑOR MONTUFAR.

In the meantime General Barrios had succeeded, during President Garfield's Administration, in obtaining the assistance of the Government of the United States in the then pending boundary question between Guatemala and Mexico. In the very paper in which Mr.

* It was this answer of mine that Señor Mariscal sent to Mr. Morgan with his memorandum of July 25, 1881 (Foreign Relations of the United States for 1881—Memorandum of July 25, 1881, of a conference between Mr. Morgan and Señor Mariscal annexed to Mr. Morgan's letter to Mr. Blaine of August 5, 1881, page 787), in which he says :

" Among the published documents (showing that the annexation of Chiapas and Soconusco to Mexico was voluntary and not compulsory) affording unanswerable evidence on these points, may be noted those written respectively by Señor Don Matias Romero and Don Manuel Larrainzar—gentlemen well acquainted with everything relating to Chiapas and Soconusco ; Señor Larrainzar being a native of Chiapas, and Señor Romero having lived in Soconusco, and having been obliged to abandon his property there, it having been ruined by Guatemalan invasions."

Mr. Morgan failed to send these publications to the State Department, because, as he said in his letter to Mr. Blaine of August 5, 1881, they were enormous volumes, he was not required to send them, and he thought they were in the library of the State Department. In the same memorandum the following passage occurs (page 789):

" The archives of the Department of Foreign Affairs are full of accounts of invasions which have occurred since 1870 until the present time ; not least among the smaller invasions was the destruction of Señor Don Matias Romero's property in Soconusco. Señor Romero, well known in Washington, where he represented Mexico for several years, notwithstanding his impartial and prudent character, had his property (which was situated in Mexican territory) invaded by natives of Guatemala, by order of a prefect of that nation, destroying his effects, taking prisoner one of his dependents, and wounding others ; in November, 1875, a complaint against this outrage was made to the Guatemalan Government, which up to this time has remained unnoticed ; on the contrary, they have ascribed to Señor Romero the setting on fire of Guatemalan territory and other improbable crimes, which he has extensively refuted."

Blaine offered Mexico the arbitration of the President of the United States an opinion on the pending question was officially expressed, entirely favorable to Guatemala's contention. I have stated in another paper, entitled "The United States and the Boundary Question between Mexico and Guatemala," what was then the condition of that question, and that statement shows that the conduct of this Government was, to say the least, extraordinary. I can only say here that the partiality, then shown by the Garfield Administration toward Guatemala, was enough to make any Guatemalan statesman lose his head, even if he had a great deal more good sense and experience in international affairs than General Barrios, who naturally thought that the Government of the United States was entirely on his side in the boundary question with Mexico, and that he could have its moral influence to force Mexico to submit that question to the arbitration of a Government, which began by stating that Guatemala was right in the dispute; namely, that Chiapas lawfully belonged to her, when it was an integral part of Mexican territory, which we had held quietly and in peace for over half a century.

As President Arthur's Administration, which succeeded that of General Garfield, did not pursue the policy of his predecessor's on this subject, General Barrios, who could not understand the change of policy, became impatient at what he regarded as an unexpected delay, which, being naturally distrustful and impressionable, he probably attributed to neglect or other personal failing, on the part of his diplomatic representative in Washington.

Doctor Lorenzo Montufar, who then held that position, was one of the most distinguished and best known public men in Central America, and made every possible effort to induce the Government of the United States to continue the policy begun by President Garfield, that is, to obtain the consent of Mexico to submit to the arbitration of the United States its pending boundary question with Guatemala, and also to induce this Government to lend its moral support to Guatemala, in her efforts to annex to Guatemala the other four Central American States, or the accomplishment of the Central American Union, as it was then called.

Such was the condition in which I found things on my arrival in Washington on the 3d of March, 1882.

Señor Montufar was then living with his family in New York, coming to Washington on Thursdays, the day set apart by the Secretary of State to receive the members of the Diplomatic Corps.

Immediately after my arrival in Washington, Señor Montufar

called on me to propose that we should agree upon some basis for a boundary treaty, with the condition that Mexico should accept the arbitration of the United States Government; his interest in the matter being so earnest as to make him appear exceedingly impatient and even nervous. He was possessed with the most extraordinary desire to settle the question himself, doubtless because he thought that it would be a patriotic act and would give him prestige in his own country; and with this view he used every effort to arrive at a settlement, even to the extent of making representations which did not altogether correspond with the facts, as will appear hereafter. In our first interview I informed him that I had no instructions from my Government on that subject, and that without such authority I could not even open negotiations with him, and in subsequent interviews I stated to him that notwithstanding that I had asked for such authority since he first suggested it, it had not been given to me, and that under these circumstances I could not treat with him officially on the subject.

Señor Montufar, however, continued asking me for my personal opinion on the question, and as he appeared ready to recognize the rights which Mexico had to Chiapas and Soconusco, a recognition which the Guatemalan Government had withheld, according to the information I had received up to that time, and as he did not propose that the United States should decide upon such rights as arbitrator, but accepted a very limited arbitration, which I thought would not affect the right of Mexico to the territory in question, I gave it to him as my personal opinion that an agreement might be made upon such a basis, provided that the boundaries between Chiapas and Guatemala should be those that had been recognized at the time they had gained their independence from Spain, and that, where those boundaries could not be identified, those which were actually recognized between Mexico and Guatemala should be accepted. This basis being accepted, there would be nothing to be decided by arbitration but matters of secondary importance, such as occasional disputes in regard to the actual boundaries in certain localities, if the interested parties were unable to agree between themselves upon the disputed subject.

Mexico had, indeed, declined, and with a great deal of reason, to accept arbitration in the form proposed by Mr. Blaine; but Señor Montufar did not suggest that kind of arbitration, and I thought it would not be advisable for us absolutely to refuse arbitration, because the new Administration established at Washington, far from sharing the views of its predecessor upon this subject, was disposed

to act as a friend of both parties, without taking the side of either and without trying to force itself as arbitrator. I was sure, besides, that under existing circumstances we should not risk any rights, since we would only submit to the decision of this Government, as already stated, questions which were really of secondary importance and upon which arbitration might be considered as proper and reasonable.

The importance of Guatemala's recognition that Chiapas and Soconusco were lawfully an integral part of Mexico was in my opinion so great, and the existing boundaries between Chiapas and Soconusco, on the one side, and Guatemala on the other, were so clearly established by the actual exercise of sovereignty, that I thought it advisable to accept the provision that the President of the United States should fix these boundaries, on the basis of actual possession; but Señor Montufar would not be satisfied with this; he desired that Soconusco should pass into Guatemala's possession, and in his counter project he proposed that the State of Chiapas should be considered as belonging to Mexico, omitting to mention Soconusco, by which he meant to imply that she should go to Guatemala.

In the paper before alluded to on the boundary question between Mexico and Guatemala, I reviewed at some length the attitude of the Garfield-Blaine Administration upon this subject. President Arthur's Administration did not share the views of his predecessor's, and followed a dignified and sensible policy which consisted in expressing to both nations concerned his friendly desire to co-operate in the settlement of the pending question, in case both nations should ask him to do so, for he justly considered that if he acted at the request of one country only, it might be thought that he took her side, to the disadvantage of the other. The efforts, which were many and urgent, of both Señor Montufar and, later on, of General Barrios himself, were not enough to make President Arthur deviate a single step from that prudent and wise policy.

Señor Montufar asked me to reduce to writing my views on the subject. I did so on the 17th of April, 1882, informing Señor Montufar that my draft contained only my personal views, which did not commit the Mexican Government in any way, but that I had transmitted it to my Government for its examination and decision.

I was not aware at the time of these interviews with Señor Montufar, that Señor Don Manuel Herrera, the Guatemalan Minister in Mexico, had been specially authorized by the Guatemalan

Government to treat on the subject with Mexico, as was stated, later on, by President Barrios in his message to Congress of March 1st, 1882, and that on the 14th of January of that year, Señor Herrera had presented to the Mexican Government a draft of a treaty of boundaries which left to Mexico most of the State of Chiapas and its District of Soconusco, and to Guatemala a portion of the States of Tabasco, Campeche and Yucatan, asking for an indemnity of \$4,000,000 to be paid by Mexico for the cession of Guatemala's alleged rights to Chiapas and Soconusco. Had I known this, I would have declined to discuss the subject with Señor Montufar.

The Mexican Government naturally saw with displeasure that while Guatemala was treating on this question in the City of Mexico, another negotiation should be opened in Washington, where Guatemala thought she could count on the moral support of the Government of the United States, and for this reason when I advised my Government of my action in the matter, I was informed that the Guatemalan Government had already instructed Señor Herrera to negotiate a boundary treaty, and that this gentleman had proposed conditions much more favorable to Mexico than those suggested by Señor Montufar, as Señor Herrera's draft gave up Guatemala's claims to Soconusco, while Señor Montufar's had modified my memorandum, omitting the word *State* and leaving only Chiapas, where I had said that the State of Chiapas belonged to Mexico, thus showing that he intended to leave open the boundary question in so far as Soconusco was concerned.

When I informed Señor Montufar of the answer of my Government, he sent me officially a copy of a communication from the Department of State of Guatemala, dated on the 13th of May, 1882, in which he was advised that Señor Herrera had been instructed "to leave things in the same condition in which they were then, until he should receive further instructions." This decision, which very likely had been taken in view of the intended trip of General Barrios to the United States, was understood by Señor Montufar as conferring upon him special authority to continue his boundary negotiations in Washington.

Señor Montufar sent my draft of bases for an agreement to the Secretary of State of the United States, with an official letter dated May 2, 1882, stating that I was ready to sign them, and in another official letter, dated on the 28th of the same month, he informed Mr. Frelinghuysen that there was danger that my proposals might

be withdrawn, and that this fact would make inevitable a war between Guatemala and Mexico.*

I had taken particular care to inform the Secretary of State that no such danger existed, and to point out the several inaccuracies contained in Señor Montufar's letters. On the strength of that information, Mr. Frelinghuysen rectified the statements of Señor Montufar on the subject, in the following passage of his letter to the Guatemalan Minister, of June 5, 1882, just quoted:

"I am told by Mr. Romero that Mexico has for years regarded, and still regards, the State of Chiapas as an integral part of the federal Republic of Mexico, in the same sense as the State of New York is an integral part of this Republic, and that he cannot give his assent to any scheme of arbitration which does not exclude the idea of submitting that question to arbitration. He adds that he has so informed you, that he told you that in laying the project before you he did it without authority from his Government, but that he thinks it will be acquiesced in by his Government if accepted by yours."

Later on, when I found it advisable to state in writing what had taken place in regard to this matter, I addressed a memorandum to Mr. Frelinghuysen on July 20, 1882, in which I said :†

"The Mexican Minister at this Capital, acting without instructions or authority from his Government, and as a personal opinion of his own, wrote, at the earnest solicitation of the Guatemalan Minister in Washington, some bases, which Mr. Romero thought might be acceptable to the Mexican Government, for the purpose of settling the boundary question under the arbitration of the President of the United States. The main feature of such bases was that Mr. President Arthur should establish the boundary line between the State of Chiapas and its county of Soconusco, as belonging to Mexico, and the Republic of Guatemala, in so far as the Guatemalan territory borders on said State of Chiapas.

"The Guatemalan Minister did not accept these proposals because they settled in favor of Mexico the question of Chiapas and Soconusco, and therefore the Mexican Government has not decided anything about it."

Mr. Frelinghuysen further said in his letter to Señor Montufar of June 5, 1881, just quoted:

"I beg leave to renew the official assurance that the President will gladly lend his

* The following extract from a letter addressed by Mr. Frelinghuysen to Señor Montufar on June 5, 1882, shows that the Guatemalan Minister represented in his letter of May 2, 1882, my draft of April 17, as an official proposition submitted by me under instructions from my Government :

" . . . Since communicating it to you I learn through several notes from you, and more especially your notes of the 2nd and 28th of May last, that direct negotiations for arbitration are taking place between you and Mr. Romero. In your note of the 2nd you communicated to me for my information a proposition from Mr. Romero to you to submit the question of boundary to the arbitration of the President of the United States, and your proposed amendment of the second article. In your note of the 28th you inform me that there is a probability that the proposal of Mr. Romero will be withdrawn and that war will ensue."

† President's Message of May 6, 1884—Executive Document No. 154, 48th Congress, House of Representatives, 1st Session, page 168.

good offices to bring about a solution of this unfortunate question if a basis can be found that is acceptable to both Guatemala and Mexico."

When Señor Montufar received the foregoing communication he came at once from New York to Washington to tell Mr. Frelinghuysen that he (Montufar) authorized the Secretary of State to settle the boundary question with Mexico in behalf of Guatemala, on such bases as he thought advisable, with the understanding that whatever the Secretary of State might decide on this point, should be signed by Señor Montufar as Guatemala's Minister, as appears from the following extract from Señor Montufar's letter to Mr. Frelinghuysen, of June 15, 1882:*

"In November I had the honor to say to Mr. Blaine, and afterwards I had the honor to repeat to Your Excellency that Guatemala places the matter in the hands of the Government of the United States. In this view Your Excellency may dictate the bases of the arbitration.

"Please settle with Señor Romero such bases, under the full confidence that I will subscribe to whatever you will settle."

Of course Mr. Frelinghuysen could not accept such a delegation of powers.

Señor Montufar represented to the United States Government that there was no hope of a settlement being arrived at through the negotiations at the City of Mexico, giving it to be understood that Washington was the only place where a satisfactory result could be arrived at, as appears from the following extract from his letter to Mr. Frelinghuysen of April 14, 1882:

"Mr. Herrera tells me that his proposals for treaties had not been admitted up to that day, and that the Government of Guatemala calls him.

"He says that he does not believe it advantageous to leave Mexico, and he sends to Guatemala the Secretary of Legation to give the explanation."

* * * * *

"He remains, therefore, certain that there does not exist any hope of settlement between Guatemala and Mexico."

Señor Montufar made similar representations to his own Government, repeating still more emphatically the statement that I had come to an agreement with him, accepting the arbitration of the United States, as appears from the following passage of President Barrios' message to the Guatemalan Congress, of December 1st, 1882:

"The reports from the Minister of Guatemala at Washington stated that he had held conferences in that capital with the plenipotentiary from Mexico; that they had already agreed to a project for submitting the dispute to arbitration; that in accord-

* President's Message of May 6, 1884—Executive Document No. 154—48th Congress, House of Representatives, 1st Session, page 167.

ance with this project the Government of the United States was to act as umpire; that the said Government accepted such mediation, and all idea of a treaty in Mexico had to be abandoned."

On the 4th of June of the same year, Señor Montufar addressed to me a letter informing me that he had just received one from Señor Herrera, dated at the City of Mexico, on the 17th of May, in which he was told that Señor Mariscal had written to Señor Herrera, "that he desired to know if Señor Montufar was instructed and authorized by his Government to settle the boundary question, as in that case the Mexican Government would accept the bases proposed in Washington," and for this reason he again urged me to settle finally the question. I doubted very much whether Señor Mariscal had really expressed such views as were attributed to him, since far from having received myself any such instructions from my Government, I had been instructed to suspend all negotiations with Señor Montufar, while the Mexican Government was carrying on negotiations on this very subject with Señor Herrera in the City of Mexico, and for this reason I answered Señor Montufar that I could do nothing more on the subject. Señor Montufar, however, wrote to me again on the 10th of June, urging once more the settlement of the boundary question through arbitration of the United States; and on the 27th of the same month he called on me again, in company with his son, Don Manuel, who was then Secretary of the Guatemalan Legation in the City of Mexico, and who was on his way to his own country, on leave of absence, and he informed me that Don Manuel had stated to him that the Mexican Secretary of State had rejected* the draft of treaty proposed by Señor Herrera on the 14th of January of that year, and that he (Señor Montufar) thought that that fact removed the only obstacle that, in his opinion, had existed, to the concluding of the boundary treaty in Washington, and that therefore we ought to lose no time in negotiating it.

III. GENERAL BARRIOS' VISIT TO WASHINGTON.

General Barrios had asked and obtained from the Guatemalan Congress leave of absence from the country for one year. Before leaving his country he addressed a message to the Guatemalan Congress, dated April 24, 1882, in which he stated that in his opinion the country was in a dangerous condition, on account

* Señor Mariscal informed Señor Herrera on June 5th, 1882, that the Mexican Government could not accept his draft of a treaty submitted on January 14th of that year.

of the boundary question with Mexico then pending; and he requested that ample powers should be conferred upon him to settle that question in such a manner as he might think most conducive to the interests of Guatemala. The Guatemalan Congress appointed a special committee to examine the subject, and this committee presented on the following day, April 25th, a report, authorizing General Barrios in a special and ample manner, to settle definitively and in whatever way he might think most advisable for Guatemala, the boundary question with Mexico. The report was adopted unanimously by the Guatemalan Congress.

What induced General Barrios to come to the United States is matter of surmise. He said in his message of December 1st, 1882,* that it was the danger of following two different negotiations for the same object at Washington and the City of Mexico, but this could hardly be the real reason, for he could have instructed his Minister at either place to stop the negotiation, and have it continued only at the other. In my opinion, the motive of his coming to the United States was either to find out for himself what was the disposition toward Guatemala of the Administration at Washington, which succeeded General Garfield's, because he could not understand that there could have been such a radical change of policy and he distrusted his own representatives, or, possibly, he was alarmed when he heard of my coming to Washington as the official representative of the Mexican Government, fearing that I might contribute, on account of the state of our personal relations, to influence this Government against him; or it may have been that he was so anxious to carry out the union of the Central American States that he made up his mind to sacrifice the interests of Guatemala in the boundary question with Mexico, with a view, by the disposal of that question, to be free to undertake the other scheme, naturally considering that he could not make a war on those States, as he did shortly afterwards, while he had a war in prospect with Mexico. Perhaps all these considerations together decided him to undertake the visit to Washington.

* The following extract from General Barrios' message of December 1st, 1882, contains the reasons which decided him to come to the United States:

"Official communications from the Ministers from Guatemala accredited to the United States of America and to Mexico, convinced me that grave complications would arise if the boundary question were treated and became the subject of negotiations in two places simultaneously, by two different persons and on two distinct bases, and in order to remove any such dangers and to arrive at a satisfactory solution, it seemed to me indispensable that there should be unity of action, by dealing myself directly with the matter, while hearing at the same time both representatives of the Government." (President's Message of May 6th, 1884, Executive Document 154, 48th Congress, H. of R., 1st Session, page 177.)

On the 24th of June, 1882, just before leaving Guatemala, General Barrios published an address to his fellow-citizens, in which he repeated substantially what he had stated to the Guatemalan Congress in asking leave to come to the United States and authority to settle the boundary question.

Señor Montufar sent me, with a letter dated at New York on the 3d of June, 1882, copies of the papers relating to the intended visit of General Barrios to Washington for the purpose of settling the boundary question with Mexico, which had been published in "*El Guatemalteco*," the official organ of Guatemala, of May 8, 1882; and believing that General Barrios would come at once to the United States to settle this question, he urged me again to come to a definitive agreement with him before President Barrios should reach Washington, as his desire to settle himself the question seemed to have been increased rather than diminished by the news of General Barrios' contemplated visit.

President Barrios left Guatemala for Washington on the 1st of July, 1882, accompanied by Señor Fernando Cruz, his Secretary of State, and Father Arroyo, a trusted counsellor, and sailed from Izabal on the steamer *City of Dallas*, arriving in New Orleans on the 10th of the same month. After spending one or two days in that city, he came to New York to join his family, which had already arrived there, they having gone by way of San Francisco.

On July 17th Señor Montufar informed me that General Barrios had instructed him to announce officially to the Diplomatic Corps in Washington his arrival in the United States, and that he had inquired from him if he should include me among the gentlemen to whom he was to make that notification, and being answered in the affirmative by a telegram, Señor Montufar sent me on the 19th of that month a copy of the circular letter, without any other address than the one on the envelope, in which he informed me that General Barrios had arrived in this city, and that he had taken lodgings at the Arlington Hotel.

Had I been in Washington without any official position, and had I been guided by my personal feelings of self-respect only, I should not, of course, have thought of calling on General Barrios, as the condition which our personal relations had reached would not allow me to take that step; but, as I represented the Mexican Government, and as he had come to this country with the object of settling with my Government a question highly important to our respective countries, I considered it to be my duty to put aside all personal feelings and to act as if I had never had any cause of complaint against

General Barrios. I concluded, therefore, that I ought to answer the letter of the Guatemalan Minister by calling on General Barrios at his lodgings and leaving my card, which I accordingly did at five o'clock in the afternoon of the day of his arrival in Washington (July 19). Probably General Barrios did not expect that I would do this, and so promptly, for immediately on receiving my card he requested Señor Montufar to pay me a visit, and to express to me the satisfaction he had in my having called upon him.

On the same day (July 19) Mr. Frelinghuysen called on General Barrios, and notwithstanding that his call was a visit of ceremony only, General Barrios spoke to him then and there of the business which had brought him to Washington, telling him that it was his purpose to settle, in whatever manner was possible, the pending boundary question with Mexico; that he desired the intervention of the United States in the case; and that he was willing to accept the bases I had proposed to Señor Montufar on the 17th of April. The same statement was made by General Barrios in a subsequent formal interview which he had with the Secretary of State at his office, on the following day. Mr. Frelinghuysen answered General Barrios, that the United States, as a friend of both interested countries, had the greatest desire to see amicably settled the difficulty existing between them, and that on this account, if both of them should ask for the arbitration of the United States Government, it would be readily granted; but that the United States could not propose to either of them, at the suggestion of the other, to accept such arbitration, and he suggested that if General Barrios had anything to propose, he had better submit it in writing. President Barrios reports his conversation with Mr. Frelinghuysen in his message of December 1st, 1882, as follows:*

"In order to expedite matters, I held a conference, as soon as possible, with the Secretary of State of the American Government, declaring to him that the Government of Guatemala was anxious to put an end to the pending boundary question with Mexico; that in order to terminate the same, this Republic relinquished its rights to the ownership of Chiapas and Soconusco, the only point that so far has stood in the way of arrangement; and that on this basis Guatemala desired the arbitration of the President of the United States. As the Minister of this Republic had given assurance that the arbitration had already been proposed by him and by the representative of Mexico, and accepted by the Government of the United States, I was certainly somewhat surprised to ascertain that on behalf of Mexico no such proposition had been made, nor had the project been agreed to; that consequently all had to be commenced over again, inasmuch as it was indispensable that Mexico should equally

* President's Message of May 6th, 1884—Executive Document No. 154, 48th Congress, House of Representatives, 1st Session, pages 177 and 178.

express a wish of arbitration, so that the President of the United States might take upon himself a responsibility, which he would not decline, provided that both parties to the dispute gave him authority to that effect. As what I heard was not in accord with the information furnished to me by our representative, I persistently dwelt on the idea that all Guatemala wanted was that the Government of the United States should decide the dispute as arbitrator, and that such was my proposition, liable to be either accepted or declined by Mexico, but that in either case I should have fulfilled my duty by granting as much as I possibly could. As it was decided in this conference that the nature of the business called for written statements, the offer was made that a note should be sent on the following day, embodying the ideas of the Government of Guatemala."

At nine o'clock on the evening of the 20th of July General Barrios was received by the President of the United States, and on that occasion he was very earnest, as he had been in his interviews with the Secretary of State, in asking President Arthur to offer his mediation in the boundary question between Mexico and Guatemala.

On the 21st of July Señor Montufar and Señor Cruz called on me, and the latter informed me that the Government of Guatemala was anxious to settle, as soon as possible, the pending boundary question with Mexico, and that it had approved the bases presented by me to Señor Montufar on the 17th of April of that year, believing that they would be acceptable to the Mexican Government; and that Señor Montufar had communicated to the United States Government Guatemala's acceptance of such bases.

I answered Señor Cruz that I had just received instructions from the Mexican Government, dated on the 1st of July, in which I was informed that Mexico could not consider Señor Montufar's proposals, so long as the Guatemalan Government would not officially notify the Mexican Government through Señor Herrera, that Señor Montufar was authorized to negotiate for a settlement of the boundary question at Washington, but that in case the Guatemalan Minister in this city should inform me in writing that his Government had approved of the bases proposed by me, I would communicate such information to my Government and I would ask again its instructions on this subject.

Señor Cruz informed me that General Barrios had called Señor Herrera from Mexico, to assist him in the negotiations which he had come to make in this capital, with a view to end the pending boundary question.

On that day (July 21st), I received an invitation from the Department of State to join in an excursion to visit Washington's tomb at Mount Vernon, Virginia, made by the Government of the United States in honor of President Barrios, and to which all the members

of the Diplomatic Corps had been invited. As this was not an official act, and as I did not desire to appear officious in a demonstration of regard to the President of Guatemala, I politely declined the invitation.

President Arthur gave a dinner party in honor of General Barrios on the evening of the 22d of July, and he invited on that occasion the Diplomatic Corps in Washington, and some members of his Cabinet. I hesitated about accepting the invitation, but finally, setting aside my personal feelings and my experience with General Barrios, I came to the conclusion that, as Mexico maintained friendly relations with Guatemala, although both countries had serious and disagreeable questions pending between them, it was my duty as the diplomatic representative of Mexico, to attend an official demonstration made in honor of the President of Guatemala. However, as I was to meet General Barrios now for the first time since the serious difficulties that I had had with him, and not knowing how he would conduct himself toward me in our first interview, he having a passionate and quick temper, I decided to be at the White House a few moments before the appointed time, so that I might be already there when General Barrios should arrive, as in that way he would have to make the first demonstration of recognition, which I desired on my part to avoid, fearing that any I made might not be reciprocated by him; and to omit making any would be improper on the occasion.

I arrived therefore at the Executive Mansion a few moments before General Barrios, and when General Barrios entered, accompanied by Señor Cruz, Señor Montufar and Father Arroyo, several of the guests had already arrived. All the guests present, excepting myself, were entire strangers to him, and he saluted me in the same way in which he saluted them, that is, as if he had never met me before, using the same phrases that he used with the other gentlemen, and I answered him in a similar manner. I was seated at the table nearly opposite to General Barrios, who as the guest of honor was at the right of President Arthur, and during the whole of the dinner he acted toward me as if he had never met me before. When we parted he acted in the same way, his conduct being very satisfactory to me, because it avoided unpleasant explanations on my part on an occasion on which it would have been inopportune to make them.

General Barrios was under the impression, as I have before stated, that I was the worst enemy he or his country had ever had, and that all my efforts were directed to do both himself and Guate-

mala as much harm as I possibly could. He even went so far as to harshly censure Señor Montufar because he had placed himself in communication with me for the purpose I have stated, as Señor Montufar intimated to me in a conversation we had on the 24th of July. When he discovered that he could not count upon the support of the Government of the United States in his hostile designs against Mexico, as he had been able to do during President Garfield's Administration, and that I had gone further than any other Mexican official, in the bases proposed for the settlement of the question, notwithstanding the serious offences which I had received from him, he probably thought that it was better for him not to ignore me in the matter, a conclusion to which my calling upon him on his arrival in Washington and my attending the dinner given in his honor by President Arthur perhaps contributed.

IV. NEGOTIATIONS WITH GENERAL BARRIOS.

The day after the dinner, that is, on the 23d of July, General Barrios called on me at my house, with Señor Cruz, Señor Montufar and Dr. Arroyo. He began his conversation with me as if no unpleasantness had ever occurred between us. He showed much cordiality and good will toward me and he complained that the sympathy he had always had for Mexico * had not been understood in my country. As I had not seen him since we parted in September, 1874, and as since that time serious difficulties had occurred between us, I thought it my duty, before renewing my relations with him and speaking to him on official business, to state that the offences which I had received from him were of such a nature that if I were not the official representative of Mexico, I would not have called on him, nor exchanged a single word with him, nor had anything whatever to do with him; but that, representing Mexico, as I did, and he coming as the President of a friendly nation, with the purpose of settling peaceably a serious question between our respective

* The sincerity of General Barrios' protestation does not appear very clearly, in the light of the following extract from a dispatch from Dr. Cornelius A. Logan, United States Minister to Central America, dated at Guatemala on May 24th, 1881—No. 179—addressed to Mr. Blaine (President's Message of May 6th, 1884, page 4):

"Barrios is intensely hated in Mexico and he returns the feeling with compound interest."

While General Barrios was not liked in Mexico, because he was supposed to be unfriendly to the country, I do not think it could be said with truth that he was intensely hated. Mr. Logan did not know Mexico, and therefore could not well judge of her feelings toward General Barrios, and he only repeated the opinions he heard expressed in Guatemala on the subject, but he could well judge of General Barrios' feelings toward Mexico.

countries, I thought it was my duty to see him and endeavor as far as was in my power, to reach a settlement of that question, ignoring completely my personal sentiments and acting as if I had never been offended by him. He answered me that the offences which I had received from Señor Don Ramon Uriarte, his diplomatic representative at the City of Mexico, and who signed with that character the charges against me, had not been authorized by him, which, however, I knew well was not the case; but as it would have done no good to discuss that incident I did not press this point, and he began to talk on the pending boundary question.

He said that all the former Governments of Guatemala having contended that Chiapas and Soconusco belonged to that country, he could not, without failing to comply with his duties as a public man, acknowledge the annexation of that territory to Mexico; that such were also the views of Señor Montufar, Señor Herrera, and all the Guatemalan statesmen around him, and that for that reason he had refused, up to this time, to make such acknowledgment; but, as he was now convinced that it was not possible for Guatemala to recover that territory, and that the question would be a constant source of disturbance and danger to his country, he was ready to recognize the fact that Chiapas and Soconusco belonged to Mexico. During this interview the gentlemen who accompanied General Barrios did not express any opinion nor say a single word, and I only gave answers.

As General Barrios was taking his leave, he informed me that on the following day he would return to New York, where he would remain for two or three weeks, and afterwards sail for Europe.

General Barrios was so much afraid that the people in Guatemala would censure him, as I have no doubt they did, for having called upon me after what had happened between us, that in reporting his first interview with me, in his message of December 1, 1882, he represented his visit as made in payment of a call that I had made on him first; for he says: *

"Later on, after returning to Mr. Matias Romero, the plenipotentiary of Mexico, a visit he had paid to me, I spoke to him about the business in hand, and he expressed to me the most favorable disposition to settle it on the terms I had suggested."

It is true that I called on General Barrios at his hotel in Washington, before he called on me, but I did so because I had received an official notification, sent to me by his official diplomatic repre-

* President's Message of May 6, 1884—Executive Document No. 154—48th Congress—House of Representative, 1st Session, page 178.

sentative and in accordance with his special instructions, of his arrival in this city, so that my call was not a spontaneous one, as it may appear from the tenor of his message, but responsive to his invitation. The way in which he explains this incident, which is insignificant in itself, clearly shows how difficult was his position and how much opposition he met with on his return home, on account of his conduct while in the United States.

I informed General Barrios in that interview of the nature of my negotiations with Señor Montufar, as he reports correctly in his message of December 1st, 1882, as follows: *

"He (Romero) at the same time declared, however, that he was, so far, without authority from his Government to treat; that the bases which had been under consideration on the 17th of April, and which already stipulated the abandonment of Chiapas, had been presented by him in his private capacity and delivered confidentially to the Minister of Guatemala without instructions, and not in any official manner, and he therefore would have to ask for instructions and powers from his Government, which he would do by telegraph."

Wishing to return General Barrios' visit before he left Washington, I called upon him at his hotel during the evening of that day. He dismissed all the gentlemen of his suite who were in the parlor with him when I arrived, and gave instructions that no one else should be admitted; and he then repeated to me, more at length, what he had said in the morning of that day, about his friendship and regard for Mexico and his sincere desire to adjust the boundary question on conditions which would be satisfactory to the Mexican Government. He told me, besides, that he desired to go himself to the City of Mexico to settle the question there, in case his visit should be agreeable to the Mexican Government. After he had said to me all he desired, he called Señor Montufar, and asked him to give me a copy of a letter which, by his directions, had been addressed to the Department of State of the United States, on the 21st of July, that had been written by Señor Cruz, whom General Barrios regarded as the ablest and most loyal of those who surrounded him, and signed by Señor Montufar, as the official representative of Guatemala. In this letter it was stated that Guatemala would, in the settlement of the boundary question, accept the fact that Chiapas and Soconusco belonged to Mexico.

The letter, in fact, expressed his idea, but with the condition that the United States Government should act as arbitrator and should propose to the Mexican Government to submit the question

* President's Message of May 6, 1884—Executive Document No. 154—48th Congress—House of Representatives, 1st Session, page 178.

to the arbitration of this Government. The Secretary of State answered that letter on the 24th of July, stating that the recognition by Guatemala that Chiapas and Soconusco belonged to Mexico would materially contribute to facilitate an amicable settlement of the question, and that the Government of the United States would willingly act as arbitrator between the interested parties, if both of them should ask it to do so. The words used by Mr. Frelinghuysen in his letter of July 24th, 1882, to Señor Montufar on this subject are as follows:*

"Understanding the question thus, the President directs me to say that if an agreement be reached between Guatemala and Mexico, tendering to him the post of arbitrator for the determination of the boundary line on bases of submission to be specified in such agreement, he will have great pleasure in accepting the high trust proposed."

I communicated at once to the Mexican Government by cable the acceptance by General Barrios of the annexation to Mexico of Chiapas and Soconusco, on condition that the United States Government should intervene in some way in the final settlement of the case; and also the desire of General Barrios to go personally to the City of Mexico to arrange the question. The Mexican Government, however, did not think it advisable that General Barrios should go to the Mexican capital; which was unfortunate, as I think, for his visit there would without doubt have made him change somewhat the bad opinion he had about Mexico, due to the fact that he knew only the frontier towns; and a better knowledge of the country would have assisted very materially in the final settlement of the difficulties.

The Mexican Government was of opinion that it was more advisable to avoid, as it did in the boundary treaty which was signed soon afterward, any intervention of the Government of the United States in this question, and that as the Guatemalan Government had not notified Mexico that the negotiations should be transferred from the City of Mexico to Washington, it was not proper to open them here. Such were the instructions communicated to me by cable on the 22d of July.

About ten years after these events had taken place, Señor Mariscal, the Secretary of Foreign Affairs of Mexico, informed me that the earnest manner in which General Barrios insisted that the boundary question should be submitted to the arbitration of the United States Government, caused the Mexican Government to

* President's Message of May 6th, 1884—Executive Document No. 154—48th Congress—House of Representatives, 1st Session, page 171.

suspect that either General Barrios intended to obtain on the northern side of the boundary, a compensation for what he considered lost to Guatemala on the southern end of the line, that is Chiapas and Soconusco, or at least that he would place obstacles in the way of the demarcation of the boundary line with a view that the matter should be finally decided by the United States Government, thus causing considerable delay, which he would be careful to prolong so that the treaty should never be concluded. Señor Mariscal represented to me that these were the reasons why Mexico did not accept the arbitration of the United States, and that this matter should come to an end as soon as possible, they prevented the visit of General Barrios to Mexico to negotiate the treaty.

Señor Montufar notified me officially on the 25th of July that the Guatemalan Government had decided to transfer the negotiations to Washington, during the absence from the City of Mexico of Señor Herrera, the accredited Guatemalan Minister; and that if in the meantime both countries should come to an agreement the question could be ended here. On the same day and through an official letter, Señor Montufar informed me that Guatemala recognized the fact that Chiapas and Soconusco lawfully belonged to Mexico; and I at once transmitted this acknowledgment by cable to the Mexican Government.

On the 27th of July I received a cablegram from the Mexican Government in answer to mine communicating the contents of Señor Montufar's letter, in which I was told that Mexico could not agree to the negotiations being transferred to the United States, and that she was disposed to continue them at the City of Mexico with the representative of Guatemala, fully authorized thereto, on the basis of the abandonment by Guatemala of all claims to Chiapas and Soconusco, without indemnity; and on the following day I communicated these instructions to Señor Montufar.

Soon afterwards an event of a serious nature took place, which, incidentally, weakened considerably General Barrios' position, and favored the interests of Mexico. I refer to the rupture between Señor Montufar and General Barrios. It seems that the latter had treated Señor Montufar with extreme harshness, a thing which was neither new nor extraordinary, and whether because this ill-treatment had reached an intolerable degree, or because Señor Montufar was unwilling to accept the responsibility of formally acknowledging that Chiapas and Soconusco belonged to Mexico, fearing that this acknowledgment would be badly received at home, the latter resigned his position as Guatemalan Minister in the United

States, and addressed a letter to General Barrios, remarkable for its aggressive tone, which was published in the newspapers of this country on the 4th of August.*

It would not become me to express an opinion about the behavior of Señor Montufar in this case, and I only mention this incident because of the connection it had with the then pending boundary question between Mexico and Guatemala.

After this rupture, I saw Señor Montufar and he showed me letters from General Barrios, in which the latter severely reprimanded him for having entered into negotiations with me about the boundary question, as he had been told that I was the most unreasonable and bitterest enemy both of Guatemala and of General Barrios personally.

As soon as General Barrios arrived at New York, he informed me that he had taken passage for Europe and would sail on the 8th of August, and he begged me to see him before his departure. With this purpose I left Washington on the 3d of August, and on the morning of the 4th called on him at the "Hotel Buckingham," where he was staying. I told him that from the conversation we had had in Washington, I had not been able to understand fully his views on the boundary question, and that I desired to communicate them correctly to my Government, with a view to have its instructions on the same.

General Barrios informed me then, that he was satisfied that Guatemala could not sustain her claims to Chiapas and Soconusco, not only for want of sufficient military strength, but because of the fact that those territories had been so long in the possession of Mexico, that it would not be possible for her to recover them; and that in the settlement of the question, he had made up his mind to acknowledge the legality of their annexation to Mexico. He further said that both Señor Herrera and Señor Montufar were decidedly opposed to making that acknowledgment and that they had gone so far as even to threaten him with tendering their resignations in case he should make it, and that the latter had already

* The following is Sr. Montufar's letter of resignation, as published by the *New York Herald* of August 4, 1882 :

"NEW YORK, August 3, 1882.

"SEÑOR GENERAL DON JUSTO RUFINO BARRIOS :

"SIR : I find myself under the necessity of intimating to you that I have sent my resignation to the Government of Guatemala. It is founded in the reason that I have not the honor of agreeing with you in many points of Central American policy and that it is impossible for me to continue suffering the treatment which you gave to many persons, without exception, on account of their loyal services.

"I protest my loyalty to Guatemala and to Central America, and I subscribe myself your very attentive servant.

"(Signed)

LORENZO MONTUFAR."

done so; but that he had made up his mind to take that step, because he was convinced that it was the only way to end the boundary question. He further said that, to satisfy public opinion in Guatemala and not to disgrace himself before his countrymen for having surrendered unconditionally the rights of his country, he desired that in the final agreement, the arbitration of the United States, or of any other government that Mexico might designate, should appear in some way in order to satisfy the pride of the Guatemalans; and, finally, that he had no particular desire that the treaty should be signed in Washington; that it was a matter of perfect indifference to him whether it was signed in the City of Mexico, in Washington, in Paris, or in any other place. That if the Mexican Government did not object he would go himself to the City of Mexico, as he had intimated before, so that the treaty could be signed there by Señor Herrera, provided the Mexican Government assured him that he would suffer no slight, during his visit to the City of Mexico, and that I should accompany him.

I answered General Barrios that the only difficulty I saw in the way of his carrying out his project was the condition of the mediation of a friendly government, because the Mexican Government had always refused such intervention; but that I would communicate to my Government his views on the subject by cable—which I did at once—and that I would inform him of its answer as soon as I should receive it.

V. PRELIMINARY AGREEMENT ON THE BOUNDARY QUESTION.

On the 5th of August I returned to Washington, and during the night of that day I received by cable instructions from the Mexican Government, saying that in case the arbitration should be agreed upon, the President of the United States should be the arbitrator; but that it would be derogatory to the dignity of Mexico that a friendly government should fix her boundaries; that the final treaty must be negotiated and signed in the City of Mexico, but that I was authorized to sign in Washington a preliminary agreement, laying down the bases of the final treaty, provided that Señor Herrera should sign such preliminary agreement.

Acting on these instructions, I prepared on the 6th of August a draft of preliminary bases, which I sent by mail on the same day to General Barrios for his examination. In the 3rd section of my draft, I provided for the possibility that the Government of the United States might act as arbitrator, in terms similar to those of the draft that I had presented to Señor Montufar on the 17th of

April of that year, but much more stringent, with the object of making the arbitration practically unnecessary, and I did so, notwithstanding the views of my Government on the subject, because I was perfectly certain that General Barrios would not accept the agreement without that condition, and because I thought that we ought not to lose the opportunity of obtaining from him the recognition that Chiapas and Soconusco belonged to Mexico.

To be certain that my action would be sustained by my Government, however, I inquired by cable, if I might accept arbitration on such conditions as would practically make it unnecessary, and which would at the same time be satisfactory to both the interested parties, and I informed General Barrios that my acceptance of Section 3rd of my draft, which had been written to meet his views, would depend upon its approval by the Mexican Government.

I was encouraged to expect that my draft would be approved by my Government, because the same ideas had been expressed in the memorandum of a conference held on July 9th, 1881, between Señor Mariscal and Mr. Morgan, containing the answer of the Mexican Government to the proposal of Mr. Blaine to submit the boundary question to the arbitration of the United States*, and in the memorandum of another conference held on March 18th, 1882, on the same subject.†

* Señor Mariscal said to Mr. Morgan in his memorandum of July 25, 1881, as follows:

"Mexico, however, is far from refusing positively all proposals for arbitration, and will reserve the right to determine whether or not it might accept such proposals at some future time, on certain points in regard to which arbitration might appear to be admissible."

(Foreign Relations of the United States for 1881. Memorandum of a conference between Señor Mariscal and Mr. Morgan, annexed to Mr. Morgan's letter to Mr. Blaine of August 5, 1881, page 786.)

† Mr. Morgan reported that conference to his Government in his letter No. 374 of March 28th, 1882 (President's Message to the House of Representatives of May 6, 1884.—Executive Document No. 154.—48th Congress, 1st Session, House of Representatives. Mr. Morgan to Mr. Frelinghuysen, No. 374, March 28, 1882, pages 72 and 73), and his report agrees with a memorandum of that interview written by Señor Mariscal, which he sent to Mr. Morgan with a letter dated March 20th, 1882, transmitted by Mr. Morgan to Mr. Frelinghuysen, with his letter above quoted, and the portion of that memorandum relating to arbitration is the following:

"But if the Guatemalan Government will agree to expressly exclude so much as related to Chiapas and Soconusco, the Mexican Government will not find it inconvenient to submit to a determinate arbitration which would be limited to the question of boundary which then surged between the two countries."

* * * * *

"Within the limitations expressed, that is to say, not including in the arbitration the right which Mexico has to the whole of the territory which to-day comprises the State of Chiapas, the Government of Mexico is disposed to admit, and will admit with pleasure, the arbitration of the President of the United States for the purpose of deciding any question which may require the employment of such a method, and which is susceptible of being decided by it in determining the boundary of both nations."

On August 7th, the Mexican Government instructed me by cable to the effect that it was not advisable to accept, in the preliminary bases for a treaty, the arbitration of the United States, but that in case arbitration was needed the United States should be the arbitrator.

Having been called again to New York by General Barrios, who had postponed his trip to Europe from the 8th to the 12th of August, I left Washington on the night of the 8th, and spent the whole of the 9th in conversation with General Barrios, Señor Cruz and Father Arroyo. Señor Herrera, the Guatemalan Minister to Mexico, had just arrived in New York, and was also present at our conference.

General Barrios informed me, in the beginning of our interview, that Señor Herrera objected to almost all the stipulations and also to the phraseology of the draft of a preliminary agreement, and that he had several suggestions and remarks to make in regard to it, and many amendments to propose.

Señor Herrera, who for over a year had been discussing this question with the Mexican Government, who had drafted a treaty which he presented to Señor Mariscal on the 14th of January of that year, and who had his own well-defined views on the subject and desired to have them incorporated in the agreement to be signed at New York, spent the whole of the day proposing amendments to my draft. It would take too long to state what these amendments were, and I will only say, as an instance, that he desired that the boundary line should be fixed from the Pacific to the Atlantic, or the Caribbean Sea; but as the only cause of dispute was the possession by Mexico of Chiapas and Soconusco, I thought that by coming to an agreement on that point the whole dispute would be settled; which would not prevent the two governments from agreeing, in the final treaty, to be signed at the City of Mexico, about the remainder of the line. As I had not sufficient data to fix the boundaries beyond the State of Chiapas I thought it would be very unsafe for me to make an international agreement about a matter on which I was entirely ignorant.

Señor Herrera suggested, also, that Mexico should pay an indemnity to Guatemala for the territories that she then recognized as belonging legitimately to us, and that Mexico should agree to pay the debt contracted by Chiapas while she belonged to Guatemala. Señor Herrera was vigorously assisted by Señor Cruz in his efforts to have my draft amended; but General Barrios remained in a passive attitude, without accepting or refusing what his advisers

said or suggested. Not to appear obstinate by refusing persistently all the suggestions and amendments proposed by these gentlemen, I concluded to accept such of them as only changed the phraseology of my draft, notwithstanding that in my opinion the changes suggested by them and accepted by me, instead of in any way improving my draft, rather left it less clear and more to the disadvantage of Guatemala than of Mexico.

Among the amendments urged by Señor Herrera which I accepted because I saw no harm in it, and because I did not desire to appear obstinate by refusing everything he suggested, was one which proved afterwards open to severe criticisms against me. Article 1st of my draft read as follows :

"The Republic of Guatemala renounces the rights which until now she has had or believed to have had, upon the territory of the State of Chiapas, including its district of Soconusco, and therefore the final boundary treaty between Guatemala and Mexico shall be negotiated on the basis that Chiapas and Soconusco are integral parts of the United Mexican States."

Señor Herrera contended that it was too hard for Guatemala to make such point blank declaration, after she had been for sixty years supporting just the opposite view of the case, and that it would be more magnanimous in Mexico to make her downfall easy, since Mexico had obtained all she desired and suggested that Article 1st should read that Guatemala "abandoned the discussion which she had maintained relative to her rights to Chiapas and Soconusco."

Of course, this declaration was not as explicit as the one proposed by me, but it made no difference in the final settlement of the question, as in the next article (II.) of the agreement it was stipulated that "in the final boundary treaty, Chiapas and Soconusco were to be considered as integral parts of Mexico," and this stipulation was still more clearly repeated in Article IV. of the same agreement. Article 1st of the agreement signed by me was afterwards contrasted with the corresponding one of the final treaty which reads, "that Guatemala forever renounces the rights she considered she had to Chiapas and Soconusco." I think it was better for Mexico, who claimed indisputable and exclusive sovereignty over that territory, not to accept even the possibility that Guatemala had any rights to the same.

After a continuous conference of more than ten hours' duration, General Barrios dismissed the other gentlemen who were present and told me that later in the evening he would speak to Señor Herrera, with a view to induce him to give up the greater part of

his demands, and he begged me to call the following day, in the hope that we might then be able to come to a definite agreement.

I returned to General Barrios' hotel on the 10th of August, and we remained in conversation during the whole of the day, discussing the pending questions, Señor Cruz, Señor Herrera and Father Arroyo being present. When we arrived at the stipulation in the third section relating to the arbitration of the United States, General Barrios informed me that it would be entirely impossible for him to sign any agreement which did not contain that stipulation; that he had given up his own views and yielded to me on every other point, sacrificing rights which the people and the public men of Guatemala regarded as incontestable, and that if he gave up arbitration he would be looked upon in his country as a traitor; for it would be said that he had sacrificed the national honor in the case without obtaining any advantage for his country. He further said that he did not believe that the United States would ever be called upon to arbitrate or to act at all in the question, and that all he desired was that arbitration should appear in some manner in the boundary agreement, even though such arbitration were nugatory, simply in order to save the honor of his country and his own.

I answered him that I would communicate again with the Mexican Government on this subject, and that I would accept the limited arbitration of the United States, if my Government should authorize me to do so; and I accordingly at once sent a cablegram to the Mexican Government on the subject.

The whole of the 11th of August was spent by us, as the two previous days had been, in conversation referring to the secondary points of the agreement, while waiting for the answer of the Mexican Government to my last cablegram, in reference to the arbitration of the United States.

At 3 o'clock P.M. on the 12th of August, General Barrios was to sail on the steamer *Celtic* for Liverpool, and his baggage had been sent on board the previous day, as is customary in such cases. At 12 o'clock he had to leave the hotel to go on board his steamer, and I had not yet received any answer from the Mexican Government to my cablegram of the 10th. Believing that if the agreement was not then signed we should lose the opportunity of obtaining the unconditional recognition by Guatemala of the rights which Mexico possessed to Chiapas and Soconusco, and considering that the terms of arbitration proposed in my draft were the same as the Mexican Government had on a recent occasion ex-

pressed the possibility of accepting, I thought I would render a service to my country by signing the preliminary agreement which contained that clause, even without authority from my Government to do so, and I accordingly signed it a few moments before General Barrios' departure.

In taking this course I was influenced, in addition to the reasons already set forth, by some other important considerations, which I will briefly state here. My personal knowledge of General Barrios and my association with him during the negotiations here referred to, had convinced me that, after his giving up all the claims to Chiapas and Soconusco that his country had maintained for over half a century, with the sole proviso that the word arbitration should appear in the agreement, to save his country's honor and his own, if Mexico did not accept that condition, a man as suspicious and as inclined to judge ill of others as he was, would return home with the firm conviction that the object of Mexico was to disgrace him in the eyes of his countrymen, and to bring about a conflict with his country; and this conviction would so intensify his hatred against Mexico as, in all probability, to make it impossible to arrive at an amicable settlement of the boundary question for many years to come, and to increase the danger of a collision between the two countries, with undesirable results for both. I was sure, too, that no other public man of Guatemala, at least none that I knew, who would be likely to succeed General Barrios, would have the courage to go as far as he had done in accepting the views of Mexico on this question; and how hard it was for him to do so, notwithstanding his great force of character and the absolute control which he exercised in his country, is shown by the way in which he presented the subject in his message of December 1, 1882, from which I have already given several extracts.

I thought, besides, that if, while General Barrios appeared to place the whole question in the hands of the United States Government, and to accept unconditionally whatever it might determine, Mexico refused even a nominal arbitration, which could do us no harm, we should place ourselves in a false position towards this Government, and by doing so we should unintentionally help General Barrios to carry out his plans to influence the United States against Mexico, and to show the world that while he was ready to settle the question in a fair and honorable manner, even to the extent of sacrificing rights which he believed his country to possess, Mexico refused absolutely to accept any honorable terms of settlement.

But in the improbable case of the President of the United States

being called upon to arbitrate about a point of relatively secondary importance, as the demarcation of the line would be, compared with the recognition by Guatemala of Mexico's sovereignty over Chiapas and Soconusco, I was satisfied that the then existing Administration in Washington, presided over by fair and honest men, would decide impartially and justly any dispute between Mexico and Guatemala, and that Mexico, having the same opportunities as Guatemala to defend her rights, we had no reason to fear the decision that might be rendered in case of such arbitration.

But of course when I made up my mind to sign the agreement before I had received from my Government authority to do so, I foresaw the possibility of the Mexican Government sending me instructions forbidding the acceptance of arbitration under any circumstances. I was so satisfied, however, that we ought not to lose the opportunity of settling the disagreeable question pending, nor put ourselves in a false position, that even in this event I was ready to accept the consequences of my conduct, whatever they might be, in the certainty that in acting as I did, I rendered an important service to my country.

Unfortunately for me, this contingency occurred; that is, the Mexican Government did not deem it advisable that arbitration should be accepted in any way in the preliminary agreement; and on the 11th of August it sent me a cablegram in answer to mine of the day before, in which I was instructed that, notwithstanding the partial engagement entered into, in the memorandum of the Mexican Secretary of State of the 18th of March, 1882, it was not advisable that in the preliminary agreement signed in this country, arbitration should be accepted. That cablegram was sent in cipher, as is customary in such cases, and was addressed to the Mexican Legation in Washington, where it was deciphered by the Secretary, and sent to me in care of the Mexican Consul General in New York. When General Barrios sailed, I left New York, for a quieter and cooler place near the city, to spend Sunday there and take some rest, after the excitement of the last few days. On my return to the city on Monday, the 14th of August, I received the cablegram, but it was then too late to comply with the instructions of my Government.

The Mexican Government disapproved of my conduct and censured me severely for having signed the preliminary bases with General Barrios.

In the preamble of the final treaty of boundaries signed at the City of Mexico, the preliminary agreement was mentioned, only

to state that the Plenipotentiaries had had it before them, but I am sure that the consummation of the treaty would have been impossible without any preliminary agreement and the final treaty was only the complement and natural sequence of the same.

I was sure that there was nothing in the preliminary agreement to arbitrate because it only embraced the State of Chiapas, whose boundary I considered well defined. But as the Mexican Government intended to agree upon a boundary over the whole country, from ocean to ocean, embracing the States of Tabasco, Campeche and Yucatan, whose boundary line was quite undefined and exceedingly difficult in so far as the territory of Belize was concerned, the stipulation regarding arbitration was naturally very obnoxious to them. Even the boundary between Chiapas and Guatemala was not very clear according to the data in possession of our State Department, as on that boundary there were different opinions and most of them very vague. It was natural, therefore, that I should take on this subject somewhat different views from the Mexican Government and that they should be reluctant to accept a stipulation about arbitration which I thought could not possibly have any effect, while Señor Mariscal, with good reason, had reached an opposite conclusion.

The preliminary agreement signed in New York only provided for the arbitration of the United States to mark the boundary line between Chiapas and Soconusco on one side and Guatemala on the other, in case the Plenipotentiaries who were to sign the final boundary treaty could not agree on that line, but it did not provide for that arbitration for the remainder of the boundary line. If, therefore, any difficulty had occurred on that point, Mexico was not obliged to submit it to the arbitration of the United States even as it had been agreed upon in the preliminary treaty, but as the Plenipotentiaries did agree upon the whole line, there was no conflict between the preliminary and the final treaty.

I, of course, considered the possibility of the last extremity, that is, the case that the Mexican Government might not only censure me and disapprove my course in accepting the clause about arbitration, but even dismiss me in disgrace, but I was so positive that in following that course I was rendering a substantial service to Mexico that I was willing to accept the consequences whatever they might be.

It is a noticeable fact that General Barrios' message of December 1, 1882, does not say a word about the treaty signed at the City of Mexico on the 27th of September of that year, and that it is

worded as if the whole question had been definitively and completely settled by the New York agreement of August 12, 1882.

General Barrios characterized the New York agreement in his message of December 1, 1882, in the following terms:*

"By virtue of these conditions Guatemala cannot longer allege any right to the territory of the State of Chiapas and of its department of Soconusco, which, on the boundaries being established, must be held to be an integral part of the United States of Mexico; nor can Guatemala by reason of this stipulation exact pecuniary indemnity or other compensation."

General Barrios evidently did not understand clearly what part the President of the United States was to take in case both countries should agree to designate him as arbitrator, as he seemed to think that he as President would have to determine the boundary line by himself, and on the ground, personally, or by proxy. This idea appears very clearly from the following passage of his message of December 1, 1882, above quoted, in which, referring to the suggestion of Mr. Frelinghuysen that he should submit in writing to the State Department his views of the question, he says:†

"This note was written and signed by the Minister of Guatemala on the 21st of July; in it was set forth the desire of this Republic to bring to a termination the dispute respecting the boundaries with Mexico; and for this purpose, in furtherance of peace and friendship between the two countries, the claim to Chiapas and Soconusco, the only obstacle that had hitherto stood in the way, was waived; that on this basis the Government of Guatemala desired that the President of the United States, as arbitrator, and with such preliminary formalities as he might think fit to prescribe, should fix the line of division between the two countries, and that through the Minister of Guatemala in Mexico the proposition of Guatemala should be made known to that Government, a proposition which, if acceded to, would put an end to the dispute, and if declined would serve as evidence to all the world that we, on our side, had spared no means of conciliation, and had made every possible concession."

In his conversation with me at the "Buckingham Hotel" in New York, when we discussed fully the subject and I explained to him that if Guatemala should declare that Chiapas and Soconusco belonged to Mexico, there was nothing to arbitrate, he said that after the treaty had been ratified, he and I, supposing that I should be appointed to the position by Mexico, should ourselves go to the frontier with our respective engineers, secretaries and clerks, and there decide, according to our good judgment, which was the

* President's Message of May 6, 1884, Executive Document No. 154, 48th Congress, House of Representatives, 1st Session, page 179.

† The same paper, page 178.

boundary line; for it was his fixed idea that he ought personally to perform this duty. On a former occasion he had taken Señor Don Alejandro Prieto, the Secretary of the Mexican Legation at Guatemala, who was an engineer, to make a survey of a portion of the boundary line of Soconusco, and he thought the definitive line should be fixed in a like manner.

General Barrios took good care to make Señor Prieto believe that the boundary line between Soconusco and Guatemala ran in the manner that suited his convenience, principally for the purpose of declaring that a small tract of public land that I had just bought from the Mexican Government was located in Guatemala, and the opinion of Señor Prieto was presented afterwards as a convincing proof of that alleged fact.

General Barrios fully expected that after he had signed the New York agreement he would be consulted before the final treaty was made. On taking leave of him just before his return to Mexico, Señor Herrera asked General Barrios, in my presence, if he had any special instructions to give him about the final treaty, and President Barrios answered in general terms that it would devolve upon Señor Herrera to carry out the agreement just signed. No doubt Señor Herrera believed himself fully authorized to sign the treaty of September 27, 1882, but by doing so he seriously displeased President Barrios, possibly because he had no further intervention in marking the boundaries; and his resentment was so great that Señor Herrera fell into disgrace, was dismissed soon afterward, and was unable to return to Guatemala as long as General Barrios lived. So far as the treaty was concerned, as it had been negotiated in accordance with the New York agreement, and with verbal instructions given by General Barrios to Señor Herrera in New York, in my presence, he accepted it, because any other course would have subjected the Guatemalan Government to the charge of duplicity, and because, after having formally acknowledged that Chiapas and Soconusco belonged to Mexico, he could not oppose a treaty which embodied that acknowledgment. General Barrios was therefore placed in the unpleasant position of having to approve a treaty which was profoundly displeasing to him and which was very severely criticised by his countrymen.

General Barrios invited me to Guatemala, assuring me that I would meet with a very warm reception there. I told him in a laughing way that after my personal experience of his treatment of me I would never again place myself in his power.

VI. CONCLUSION.

So strong and so determined was the opposition in Guatemala to the boundary treaty with Mexico, that General Barrios thought it necessary to address to Congress a special message on this subject, with the main purpose of explaining and defending his course, in which he made frequent allusions to the criticisms to which he had been subjected, and reported what he had done since he had been authorized by Congress to settle the question. Four-fifths of that long paper are devoted to the defence of his conduct and to giving in detail the reasons he had for signing the treaty and considering the question of Chiapas and Soconusco as Mexico had presented it before, to wit: that Chiapas having proclaimed its annexation to Mexico when she achieved her independence from Spain, and having been ever since an integral portion of the Mexican Republic, the only way to recover that State from Mexico was through a war, which it was not prudent for Guatemala to undertake. In reading that message anybody, knowing how strong was the position that General Barrios had in Guatemala and how great was the terror which he inspired, cannot fail to appreciate how profound must have been the discontent with the treaty. General Barrios went so far as to say that in accepting the treaty it might be possible that he had made a mistake, and to ask Congress to reject it in case they thought so.

I think General Barrios deserves great credit for the manly and patriotic manner in which he solved the question, rising superior to the prejudices of his countrymen, to do what was highly unpopular with them. It is not strange that at the time his course should have been greatly criticised and even ridiculed, but on sober reflection his impartial countrymen, I do not doubt, will render him the justice he deserves for the courage, firmness and patriotism he displayed on that critical occasion and with so many odds against him. He terminated a question which had been a source of serious and constant irritation between his country and Mexico and which might at any time have caused a conflict between them, to the great detriment of Guatemala, and he did so without losing anything more than Central America—not Guatemala—had lost over sixty years before, and which she had never since had a possible hope of recovering.

The importance of this transaction in the diplomatic and political history of America makes it worthy, in my opinion, of the time and space I have given to it in this paper.

Far from having any antagonistic interests, Mexico and Guate-

mala have a great many things in common. They occupy adjoining ground in one of the most important sections of the North American hemisphere; they both are inhabited by people of the same race, having the same origin, and who were conquered by the same European Power, suffered the same fate during the three centuries which they remained in her subjugation, and achieved at the same time their independence from Spain; they are bound together by the ties of common traditions, language, religion and civilization, and they have the same destinies in this hemisphere. They should, therefore, be fast friends, develop their own resources, educate their people, and act together as the representatives of the Spanish branch of the American family, occupying the North American Continent.

M. ROMERO.

WASHINGTON, D. C., DECEMBER 31ST, 1896.

TRANSLATION.—On the part of the United States of Mexico, Mr. Matias Romero, Envoy Extraordinary and Minister Plenipotentiary of the United States of Mexico at Washington, being duly authorized by his Government to treat with the representatives of Guatemala; and on the part of the Republic of Guatemala, General J. Rufino Barrios, constitutional President of the Republic of Guatemala, being fully authorized by the Guatemalan National Assembly, by a decree bearing date of April twenty-eight, one thousand eight hundred and eighty-two, to settle the boundary question pending with Mexico; Mr. Manuel Herrera, Jr., Envoy Extraordinary and Minister Plenipotentiary of Guatemala near the Mexican Government, and Mr. Fernando Cruz, formerly Minister of Foreign Relations of the Republic of Guatemala, the associate of General J. Rufino Barrios in the discharge of the duties of the aforesaid settlement, having met in the City of New York on the fourteenth day of August, one thousand eight hundred and eighty-two, declared that the Government of Mexico and that of Guatemala, desiring to terminate amicably the difficulties which had existed between the two Republics, and with a view to establishing a solid basis for the fraternal relations which were thenceforth to unite them, agreed upon the following articles, as preliminary to a final treaty concerning boundaries on that portion of their frontier which compromises the State of Chiapas:

ARTICLE I.—The Republic of Guatemala abandons the discussion which it has maintained relative to its right to the territory of the State of Chiapas and its Department of Soconusco.

ARTICLE II.—The final treaty relative to the boundary between Mexico and Guatemala shall be concluded on the basis that Chiapas and Soconusco are to be considered as integral parts of the United States of Mexico.

ARTICLE III.—The Republic of Guatemala being satisfied with Mexico's appreciation of the course pursued by her, and with the recognition that the lofty purposes which have inspired the arrangements made in the foregoing articles are worthy and honorable, will require no pecuniary indemnity or other compensation on account of the preceding stipulations.

ARTICLE IV.—In the event of the two contracting parties not being able to agree with respect to the fixing of the boundary, either in whole or in part, between the State of Chiapas and its Department of Soconusco, on the part of Mexico, on one hand, and on that of the Republic of Guatemala on the other, or in case the commissioners who shall be appointed by each Government to draw conjointly the dividing line shall differ on any one point or points relative to such drawing, and in case it shall be necessary to appoint an arbitrator to settle such differences as may arise on this account, both Governments agree to do so, and to request the President of the United States of America to act as such arbitrator.

ARTICLE V.—Actual possession shall serve as a basis in the drawing of the dividing line. This, however, shall not prevent both parties from abandoning this basis by common consent, for the purpose of following natural lines, or for any other reason, and in such case the system of mutual compensations shall be adopted. Until the dividing line shall have been drawn each contracting party shall respect the actual possession of the other.

ARTICLE VI.—The Government of the United States of Mexico and that of Guatemala pledge themselves to sign the final boundary treaty, in the City of Mexico, on the basis contained in this convention, within six months, reckoned from this date at the latest.

In testimony whereof we sign this convention in duplicate, no ratification thereof being necessary, inasmuch as it merely establishes a basis for the final boundary treaty, that treaty being the one to be submitted to both Governments for their approval.

M. ROMERO.
J. RUFINO BARRIOS.
MANUEL HERRERA, JR.
F. CRUZ.

RECENT FOREIGN SURVEYS UNDER THE DIRECTION OF THE U. S. HYDROGRAPHIC OFFICE.

BY

G. W. LITTLEHALES.

The principal geographical work under the direction of the Hydrographic Office during the last year was carried on in Mexico, Guatemala, and Honduras. The continuation of the survey of the Mexican coast was executed in compliance with an act of Congress, for the improvement of the means for the safe navigation of that coast. The surveys of Honduras Bay, Santo Tomas Bay, Port Livingston, Hospital Bight, and Port Cortés, in Guatemala and Honduras, were undertaken by the Navy Department in the winter of 1895 and 1896 at the request of the government of Guatemala, and the urgent solicitation of those representing the industries of that region.

THE SURVEY OF THE WEST COAST OF MEXICO.

During the interval from 1885 to 1895, the survey of the west coast of Mexico has progressed from the boundary line between the United States and Mexico, at San Diego, California, to Entrada Point, the northern entrance to Magdalena Bay, a distance, measured parallel to the general trend of the coast, of 550 geographical miles. The survey has consisted throughout of a main, and a secondary or shore triangulation, conducted from accurately measured base-lines. In connection with the triangulation, the coast line and topography have been delineated. The geographical positions of selected points in the harbors and anchorages and, with special accuracy, at the beginning and end of each season's work, have been established by astronomical observations with a portable transit and by the transportation of time by nine chronometers from the secondary meridian of San Diego. At or near these observation spots, the magnetic declination, dip, and intensity have been determined by means of a portable Kew magnetometer and a Dover dip circle.

As the survey was undertaken solely for the production of charts for the use of mariners, special attention was given to the development of the bottom of the sea between the coast and the 100-fathom line, the object being to set forth on the charts, by the fullness and sequence of the soundings, the depth of water at every step. It

was the aim to include all information of a nature to aid the navigator in navigating his ship, such as the appearance of the shore, whether high cliff, low rock, flat beach, marsh, or mud bank; the general elevation; whether it is barren or cultivated; convenient landing places; the materials of the beach, whether sand, gravel, shells, shingle, or stones; the condition of the shore with respect to surf and breakers; the places where water, wood, or coal can be procured; and the mountains and hills which can be seen from the offing, with their heights expressed in figures and by contour lines, and with whatever conspicuous objects stand upon their sea faces.

During the season of 1895 and 1896 the officers of the U. S. S. *Thetis* extended the survey from Entrada Point to Lobos Point, just below Todos Santos, a distance, reckoned parallel to the coast, of about 120 geographical miles. Their work consists of the surveys of Magdalena, San Lucas, and Santa Maria bays, with adjacent lagoons, and the continuation of the survey of the west coast of Lower California, embracing triangulation, topography, and hydrography within the limits above stated. Near Todos Santos a baseline two miles long was accurately measured.

Tidal observations were made at Man of War Cove, Magdalena Bay, from October 9 to December 10, 1895, every 15 minutes, day and night. The box gauge upon which the heights were measured was well protected, and during the whole period of observation there were no atmospheric changes of sufficient importance to cause any marked irregularity in the tide. The deduced mean interval elapsing between the upper transit of the moon and the time of high water was eight hours and seventeen minutes, and the mean interval between the upper transit of the moon and the time of low water was fourteen hours and three minutes. The greatest rise and fall of the tide was found to be eight feet, the least rise and fall $2/10$ of a foot, and the mean rise and fall $3-81/100$ feet. The mean length of flood tide (from low water to high water) is six hours and fifteen minutes, and the mean length of ebb tide (from low water to high water) six hours and eight minutes. The corrected establishment of the port is eight hours and twenty minutes.

The brick pier, marking the astronomical observation station at Todos Santos, whose geographical position was determined to be in latitude $23^{\circ} 27' 13''.78$ and in longitude $110^{\circ} 14' 07''.65$ west of Greenwich, is situated on the seaward brow of the first ridge to the northward of Todos Santos Valley. About thirty feet east of the pier is a small adobe hut, and about seventy-five yards to the westward, at the foot of the slope, is a larger adobe dwelling. Magnetic ob-

servations were also made at this pier which determined the magnetic declination for January, 1896, to be $9^{\circ} 11'.9$ E., the dip $49^{\circ} 00'.45$, the horizontal intensity 0.33082, and the total intensity 0.5043 C. G. S. units.

At the northern extremity of the season's work is the village of Magdalena, now much shrunken in size on account of the decline of the orchilla trade, and deriving whatever of importance it has at the present time from the fact that its magnificent harbor is the only perfectly sheltered port of refuge on the west coast of the peninsula of Lower California. Formerly, some 20 years ago, when the business of gathering and exporting orchilla from Lower California was at its height, Magdalena was a port of considerable commercial activity and importance; and often, it is said, 15 or 20 vessels would then be found at anchor within the bay waiting for their cargoes of orchilla. But of late years, the decadence of that trade has left the town without sufficient commerce to justify its existence; and it is consequently dwindling away. It has at the present time about thirty frame and adobe houses, and about fifty inhabitants. Its scanty supply of water, brackish and scarcely drinkable, is brought from the spring several miles distant. No vegetation is to be seen in the vicinity of the town.

Notwithstanding these disadvantages, it still retains some of the characteristics of a town. Its chief municipal officer is a "Juez," subordinate to, and under the jurisdiction of, the "Presidente," or Mayor, of the inland town of Comodu, which is between fifty and sixty miles distant. There is a post office in the town, from which an overland mail is occasionally sent to La Paz, and thence reaches the interior towns. The Pacific Coast Steamship Company's steamer *St. Paul* touches at Magdalena for a few hours once a month on its northern voyage.

At the southern extremity of the season's work, on the bank of the Todos Santos River, a never-failing stream of water flowing through the fertile valley of the same name, is the village of Todos Santos, situated about two miles inland on the site of the ancient mission of Santa Rosa. Here the 800 people that make up the population, surrounded by well cultivated fields of sugar-cane and by gardens in which are found the cereals and vegetables of the north together with the fruits of the south, live in the enjoyment of a climate which combines the advantages of the temperate and the tropical zones. There is no harbor here, but in moderate weather a good anchorage, which is indicated on the charts, may be found off Lobos Point.

Between Magdalena and Todos Santos the surveyors found a barren, rolling country, not more than 50 to 100 feet above the level of the sea within a distance of four or five miles from the shore, cut by gullies and arroyos, and covered in many parts with cactus and stunted brush. Skirting the sea ridge, which extends along the beach almost uninterruptedly throughout this region with a height from 10 to 30 feet, is the main highway of Lower California, called the Camino Real, leading northward from San José del Cabo, near Cape San Lucas, to the important places of the Peninsula. Between Todos Santos and the region of Magdalena Bay it is never more than a mile from the sea, instead of in the middle of the Península, as generally represented in the maps of the present time.

Within the region surveyed this highway passes through Palmarito, Carisal, Inocentes, Tiputati, Cuñano, Conejo and San Luis, and thence northward to Comondu.

Comondu, situated in the mountains of Lower California, in latitude $26^{\circ} 04'$ and longitude $111^{\circ} 44'$ west of Greenwich, is the chief town and seat of government of a section of Lower California extending from the Gulf of California to the Pacific Ocean and from a point north of Purísima to the neighborhood of Magdalena Bay.

It was founded in 1708 by Jesuit missionaries in a locality some twenty miles north of the present site, which had to be abandoned on account of the scarcity of water. The present town has about 1,000 inhabitants, and, excepting La Paz, it is the largest place in the southern half of Lower California. There are two schools for children, and a church; and some of the houses are built of stone instead of adobe, the usual building material in this country. The church, which is two miles above the town, is carefully built of stone and brick. Its excellent masonry, its arched brick roof, and the few remaining bits of wood carving, reveal the religious care and enthusiasm of the Jesuits, who erected it nearly two centuries ago. Of the parts that the ravages of time have spared for the use of the present generation is a beautiful chime of eight bells brought from Spain. The town is located in the narrow valley of the Comondu, forty miles from Boca de las Animas, on the Pacific Coast, and about the same distance from Loreto, on the Gulf of California. It is thirty miles south of Purísima, and thirty-five miles north of San Javier. With the outer world it is connected by trails passing over the most rugged mountains and tablelands. Over these the mail is brought on muleback from La Paz twice a

month. The settlement extends along the valley six or eight miles, three or four miles above and below the town proper. At the upper end of the settlement the valley narrows down to a mere defile and ends abruptly in the side of the lofty table-lands. At this point there are two springs, only a few yards apart, which afford the settlement its supply of cold and warm water respectively.

It seldom rains in Comondu. They look for one or two showers each year, but there are sometimes periods of several years when no rain falls. There is but little variation in the temperature the year round. In the valleys they have no frosts, and hail storms are very exceptional. The prevailing winds are from the north and northwest, although they are not perceptible in the deep cañon of the Comondu. This little valley is described as a veritable paradise. A genial climate and never-failing water supply give rise to a vegetation in a strange contrast to the surrounding barrenness. The bottom of the valley is made up of a rich alluvial deposit in which can be grown everything that flourishes in a temperate or sub-tropical climate. Oranges, dates, figs, grapes, olives, pomegranates, wheat, rye, barley, sugar-cane, beans, pease, and many garden vegetables are raised. Each year quantities of oranges, dates, figs and raisins are transported across the mountains to the Gulf, and shipped to various points. The chief occupation is agriculture on a small scale, and often not beyond the actual needs of the family. A few cattle are raised.

There are no trades-people in the town. Each family tans its own leather, and most of them make their own shoes. A little light wine is manufactured. Sugar of a coarse quality is made from the sugar-cane. An intoxicating drink called *mescal* is distilled from the roots of a plant growing in the neighborhood.

The notable health and longevity of the native inhabitants of the comparatively few small settlements that have grown up wherever, in the midst of this barren land, there are soil and water enough to raise a living, is worthy of remark. At San José de Garcia ranch, situated about 10 miles from the Pacific coast, in latitude $26^{\circ} 35'$, there are 5 families, numbering 59 souls, chiefly proceeding from intermarriage between two families which established a settlement there 130 years ago. The patriarch and chief owner is 73 years of age, and has resided there all his life. About 50 years ago he succeeded his father, who, in turn, had succeeded his father. The mother of this man is also living at the ranch in good health at the age of 93 years, and his uncle died there within late years after spending a lifetime of 115 years upon the same spot.

No serious sickness has visited this settlement since 1840, when there was an epidemic of cholera morbus of short duration.

GUATEMALA AND HONDURAS SURVEYS.

Guatemala and Honduras have advanced in the scale of commercial importance since the survey of the coast of Central America by the British Admiralty between 1833 and 1841. The demands of the regular lines of steamships running from New York and New Orleans to Livingston and Puerto Barrios, the great increase of shipping from the ports of the United States, and the reports of the incompleteness of the former survey and of the finding of uncharted shoals in the approaches to Puerto Barrios in the Gulf of Amatique were sufficient to justify the request for a new survey of the Bay of Honduras, especially as an impression was gaining ground that this magnificent water was silting up at such a rate as to threaten the continued approach to Puerto Barrios. It is difficult to account for the origin of this idea since the Peninsula of Manambique ought to protect the Bar of Honduras from all tidal deposits from the silt of the Motagua River, and there is no other silt-bearing river in this region. An examination of an old English Admiralty chart of 1803 shows the existence at that time of one of the two recently reported shoals in the fairway to Puerto Barrios.

During January and February, 1896, the officers of the U. S. S. *Dolphin* made a detailed survey of the whole of the Bay of Honduras or Gulf of Amatique lying southward of a line joining Cape Three Points with the town of Livingston. The results of this survey are forthcoming in the following designated Hydrographic Office charts: Honduras Bay, scale 2 inches to the nautical mile; Santo Tomas Bay, scale 6 inches to the nautical mile; Port Livingston, scale 8 inches to the nautical mile; and Hospital Bight, scale 4 inches to the nautical mile. From a carefully measured baseline, a triangulation was carried on by theodolite throughout the region bordering the entire Bay. The positions of the soundings were determined by sextant angles measured between the signals which were erected at the triangulation stations. The lines of soundings were spaced 300 feet apart in one direction in Santo Tomas Bay and 600 feet in the other direction at right angles to the first, and in the main Bay 600 feet and 1,200 feet likewise. All shoals were developed in detail. A comparison of the results of this survey with the earlier one shows, when allowances are made for the greater completeness of the later work and for the correction of more than a mile in the geographical positions in all parts

that was carried on by the U. S. Hydrographic Office during the decade following 1874. Telegraphic time signals were transmitted from Guatemala to Puerto Barrios on three successive nights, and provided for the deduction of a satisfactory longitude. The resulting geographical position for the southeast corner-stone of the Comandancia at Puerto Barrios is $15^{\circ} 43' 26''$ north and $88^{\circ} 36' 15''$ west of Greenwich.

The tidal observations that were made throughout the period of the survey show that the time of tide is largely influenced by the wind, and that the rise and fall is about 8 inches.

At the completion of the survey of Honduras Bay, the ship moved to Port Cortés, situated 40 miles to the eastward, in Honduras, and about six miles east of Omoa, where the inner harbor has filled up since the survey of 1844. The town of Puerto Cortés, located in the northeastern part of the Port, is the terminus of the Interoceanic Railway of Honduras and a place of considerable commercial importance. The survey, which was carried on with a degree of detail like that described with reference to Honduras Bay, has lately been published at the Hydrographic Office, on a scale of 4 inches to the nautical mile. A comparison of this chart with that constructed from the surveys by Commander Owen, R. N., in 1830, and Lieutenant Jeffers, U. S. N., in 1853, shows that extensive changes have taken place in the contours of the bottom and in the depths of water, especially in the eastern part of the harbor, where large areas have shoaled from 7 down to 4 fathoms. These changes are set forth in the accompanying chart, where the contours of the bottom in 1853 are contrasted with those in 1896. None of these changes, however, affect the port as far as navigation is concerned. It is a fine, extensive harbor capable of accommodating with safety a large amount of shipping at all times except during the prevalence of northers. These storms blow from the west in this locality, or directly into the harbor; and it sometimes happens that, during two or three days, the sea raised by the wind is so heavy that vessels are compelled to leave the harbor and put to sea for safety. A notable result of the recent survey is the development of an error of more than two miles in the latitude which has heretofore been accepted for Puerto Cortés.

THE SETTE COMUNI: A TEUTONIC SURVIVAL ON ITALIAN SOIL.

BY

W. D. McCrackan.

The highland district of the Sette Comuni, or the Seven Communities, forms part of what is virtually a spur of the Dolomite Alps, stretching southward into the great Italian plain, almost as far as Vicenza. Here a German dialect and Teutonic institutions survive, although on Italian soil and completely surrounded by Italian influences.

Similar conditions prevailed until very recently among the Trentici Comuni, or Thirteen Communities, which reach to the very gates of Verona; but the latter, according to last accounts, may now be described as entirely Italianized.

As neither district has ever stood in the direct track of commerce or of tourist travel, visitors from the outside world have always been exceedingly rare, in spite of the fact that the great route from Verona to Innsbruck, over the Brenner, runs close under the precipices to the west, and in the east, that favorite road into the Dolomites, the one from Bassano to Belluno and Cortina.

What lends particular interest to this wavering line of language in the borderland between the empire of Austria and the kingdom of Italy, is, of course, the question of the Trentino. There is strong pressure along the frontier. From the south comes the steady encroachment of the *Italianissimi*, from the north the defensive tactics of those who are determined to maintain their *Deutschtum* at all costs.

Choosing a rough mountain track, the Menador di Levico, the writer started from the Val Sugana, on Austrian soil, in the early morning of the 3d of July last, to mount to the tableland which promised so much from an historical and linguistic standpoint.

Two hours and more of zigzagging up the shadeless and stifling cliffs of the Dodici range brings one suddenly, as by enchantment, into the fresh forests and parklike pastures of Vézzena, famous far and wide for a particularly fine sort of cheese. German philologists, with some show of reason, like to say that Vézzena is an Italian corruption of their own *Wiesen*, or fields. However that

may be, I had no sooner crossed over the frontier into Italy and entered the bleak Val d'Assa, than I came upon an unmistakable German name, an inn called the Ghertele. Not only was this German in general, but *Schwäbisch* in particular; for did not Gärtle mean a "little garden," as any peasant in Würtemberg, Baden or German Switzerland would have told you at once? And, sure enough, the innkeeper's wife was hoeing in a potato patch, the only cultivated land for miles in any direction. Moreover, as I sat for awhile in the inn over a glass of red wine, the people of the house discussed me in a dialect which they knew as *Cimbro*, but which certainly contained a great deal of *Schwäbisch*.

From the narrow defile of the Val d'Assa, after a walk of between eight or nine hours from Levico, I emerged in the early afternoon upon a vast tableland of grass, fringed by forests,—a plateau some three thousand feet above the level of the sea, which, as far as my experience goes in the Alps, is absolutely unique. The famous Seiser-Alpe, further north in the Dolomites, is the only mountain pasture which can be named in the same breath; but that is more Alpine, and is not inhabited except during the haying season.

In the land of the Sette Comuni the eye roams for many miles east and west over a rolling highland, green and joyous as of the north, spanned by a southern sky. Here and there clusters of houses appear on smooth knolls of ground; men are seen mowing, and rows of women keep time with a rhythm of rakes; herds of cattle graze near and far;—the whole forming an idyllic dairy district, surrounded by a woodman's paradise. Sounds carry a great distance over the plain, as over water, whether it be the lowing of cattle, the tolling of church bells or the singing of larks that soar exuberantly in the Italian sky, above this bit of semi-Teutonic land. With the breath of the mountains in one's nostrils, it is hard to believe, that off there, to the south, only a few miles over the edge of this pasture, lie Verona and Vicenza, and all the other stuffy cities of the plain, sweltering in their glaring streets in the midst of vine-bearing, highly-coloured, dear, dirty Italy!

The houses of the villages and hamlets in the Sette Comuni are distinctly un-Italian in appearance. For the most part they are thatched or shingled and peak-roofed, in order to shed the snow in winter, betraying almost a Gothic tendency. There are no chimneys, so that the smoke from the hearth issues at some convenient window and leaves a black trail up the side of the house. Moreover, these mountaineers do not seem to have that irresistible

desire to paint their walls all colours of the rainbow, which somehow goes with the Italian temperament. On the contrary, they are content to let the rough mortar of their houses weather into various natural shades of gray and drab. In truth, the farmhouses might belong equally well to Swabia, or to any region where thatched roofs and shingles still survive; certainly least of all to Italy, where such materials for building purposes are almost unknown.

There are said to be about five months of snow on the level of the plateau in winter, but little wind and much sun, as in the health resorts of the Engadine. The snow on the surrounding heights, however, does not disappear entirely before the height of the summer. On the day of my arrival a destructive hailstorm broke over the district, and the slopes were white with hailstones until noon of the next day, which was the 4th of July. Curiously enough, too, when the weather breaks and the air darkens, a soft gray light sweeps over the level, as of England or the coast of Normandy. The smooth grasslands become downs or dunes; one looks for the sea on the horizon, or windmills on the round hillocks. Take it all in all, therefore, the plateau of the Sette Comuni does not recall so much the Alpine life of Switzerland and the Tirol, with its chalets and snow peaks, as some vast clearing in the Black Forest, into which the spirit of the English downs creeps when the weather is bad. Why the region has not long ago become a grand summer resort for the cities of the Italian plain, seems incomprehensible,—made to hand as it is!

The names of the villages comprising the Sette Comuni are as follows: Rotzo, Roana, Asiago, Gallio, Foza, Enego, and San Giacomo di Lusiana—all of Latin derivation. United to them were once nine villages, which went by the designation of Contrade Annesse, or annexed districts: Campese, Campolongo, Oliero, Valstagna, Valrovina, Vallonara, Crosara, San Luca, Conco and Dosanti. Until recently the latter appear to have stood to the Seven Communities in much the same relation, as the allied and subject lands of the Swiss Confederation once stood to the Thirteen original States.

Of the total population, numbering over 30,000, the greater number are engaged in cattle-breeding, cutting lumber, charcoal-burning and straw-plaiting. Many of the men, also, as elsewhere in the Italian-speaking Alps, go out into the world to peddle pictures of saints and religious books, leaving the women at home to do the field work. It has been found that a knowledge of *Cimbro* is of real service to these peddlers in making all other German dialects, they

may encounter in their wanderings, easy to learn. As for the rest, one cannot say that the type of the people is in the least German; on the contrary, it is to all appearances as Italian as possible, often very handsome, and sometimes less clean than one might wish.

The principal historical function, performed by these *homines teutonici* in the past, was to act as an advance guard of the Venetian Republic against encroachments from the north; while to-day the Italian kingdom values the district mainly for its strategic position on the frontier of the Austrian empire.

Most of the documents, relating to the period from the tenth to the fifteenth century, were lost in a fire of Asiago. Since the fall of the Venetian Republic, the remaining archives have for the most part been scattered to the winds; stolen, when they seemed to possess value; burned in bonfires on holiday nights; or, worse than all, sold for a song, to be used as wrapping paper in meat and sausage shops! I myself can testify to the carelessness displayed in this regard, for in a room which once formed part of the large hall of the government, and is now used for a little museum, I saw drawers full of parchments, thrown in pell-mell, some bearing the seals and signatures of the Doges of Venice.

For some years past all the inhabitants of the district have learned Italian as well as *Cimbro*, so that at the present time the German dialect is in a sense a special accomplishment. It is to be found only in four of the seven communities: in Asiago, Foza, Roana and Rotzo; and then, is used mostly in the family circle, and by old people.

Italian scholars of the seventeenth century, and even later, generally accepted the theory of a Cimbrian origin.

An amusing story is told of Frederic IV, King of Denmark and Norway, who paid a visit to Asiago in 1709. It appears that while travelling *incognito* in Italy, as Count of Oldenburg, and accompanied by a suite of fifty-four courtiers, he made a stay of a week at Vicenza. On one occasion his courtiers, strolling about the town, were surprised to come upon some men speaking a German dialect. Upon inquiry, the peasants explained that they were from the Sette Comuni, and were speaking *Cimbro*. That evening, at dinner, the curious meeting was mentioned in conversation, and next day Frederic, as king of the land which was supposed to be the original seat of the Cimbri, decided to pay a visit to the interesting upland. His cavalcade of Danish and Italian noblemen were received with acclamation by the peasants of Asiago, cries of *viva il re dei Cimbri!* resounded on all sides, and local hospitality put its very best foot

forward. Bonato, the historian of the Sette Comuni, declares that Frederic entered into conversation with many of the people, but that he came to the conclusion, that their dialect had no relation to Danish whatever; that, on the contrary, it was unquestionably high German; and probably derived from Teutonic races, much nearer to them than Denmark. In order not to disturb the festivities, adds Bonato, Frederic took care not to express his opinion during his visit.

Whatever may have been the first cause, the fact is established that, until the seventeenth century, German-speaking colonies were scattered far and wide over this Alpine district. Then the Italian language gradually turned the tables upon its rival. Until the seventeenth century the priesthood of the Sette Comuni had been recruited almost exclusively from German-speaking native families, or from various parts of Germany and Austria. The children were taught their catechism in German, the adults confessed in German and listened to German sermons. But from the moment that an Italian clergy displaced German priests, *Cimbri* was to all intents and purposes doomed.

The peculiarities of this dialect are by no means insurmountable. Many Italian roots are taken and German endings added, as for example *pensare*, to think, becomes *pensarn*, much in the same way as our own Pennsylvania Germans say *steamboaten*, to travel by steamboat. A very striking peculiarity is the constant change of *v* sounds into *b*.

"Wir sind" becomes "bir sain."

An old man said to me at Asiago, "Do you know what we call 'Verona' here? We call it 'Bern!'"

Then I remembered that Theodoric the Great, because he sometimes resided at Verona, was known in the German hero romances as Dietrich von Bern. I also called to mind the name of Bern, the capital of Switzerland, which has long been a subject of contention among historians. The old chroniclers used to say, that the name was derived from the bear which is the heraldic animal of the city, but now we know that the Dukes of Zaeringen, founders of Bern, had once possessed the Margraviate of Verona, so that they must have named their new city in memory of the old.

As a further example of this change of *v* sounds into *b*, let me quote the delightful inscription painted beneath the big sun dial on the wall of the great parish church of Asiago.

The north German of this would be: "Ich Schweige, Wenn Das Licht Mir Fehlt, Und Selten Rede, Aber Wahr."

In local dialect it reads: "Ich Schbaige, Benne De Lichte Vehlmar, Un Selten Rede, Aber Bahr."

"I am silent, when the light fails me and seldom speak, but true."

Underneath this inscription we have the following characteristic local names of the painters, marvellous mixtures of Italian and German:

Redeghiero Christan Giökel

un Costa Hans Pruk

Michen 'Z Jhar 1890

Practically all the words of the dialect, referring to objects of general household use, are German, but sometimes old German meanings have been retained. For example, when these mountaineers speak of *Hose*, they do not mean trousers, as the modern German do, but stockings, like our English hose. Sprechen, to speak, becomes prechten; Schäfer, shepherd, Schafar.

In a room which once formed part of the hall of the government, I found an old wardrobe, newly painted. At the top were these words in quaint characters: "Hia saint de Brife von Sieben Kamoun:—" "Here are the charters, or briefs, of the Seven Communities." But the wardrobe was empty. All the parchments, it had once contained, were scattered or destroyed. Amid the centralization, which is the order of the day in Italy, the people are losing interest in local self-government; the institutions which gave the Sette Comuni a place in history, however humble it may have been, have almost vanished. Only in certain regulations concerning the ownership and use of fields and forests can the traces of independence still be discerned.

Historians have more than once remarked upon the sincere attachment which the Alpine races, subject to Venice, displayed towards that rule. The Doges of Venice generally wrote in their documents: I nostri fedelissimi e poverissimi Sette Comuni. It seems, as though the rich republic of the sea and the sturdy little republic of the mountains must have understood each other most thoroughly, nor presumed too much upon each other's good nature. As with Cadore, so with the Sette Comuni, tact and mutual respect were found to be successful, where armed intervention might have proved disastrous; to this day, therefore, the lion of St. Mark still adorns many a public building in the Dolomites. Peasant women still go to the village fountain, or the mountain stream, carrying copper buckets, slung from a wooden yoke, as do their city sisters in the little squares of Venice.

Under Venetian rule the government of the Sette Comuni con-

sisted of local councils for the several communities, and a central council for the seven, called the Spettabile Reggenza, representing the sovereign power and meeting annually at Asiago, where also resided a chancellor of the Reggenza. A proof of the surprising independence of the Sette Comuni is afforded by their so-called Nunzi, officials maintained by them in the principal cities of the Venetian Republic, to watch over their interests, after the manner of modern consuls. They elected their own judges, and their only obligation was to defend their mountain passes against the foreign foes of Venice. The men could not be drafted for foreign military service. In fact, during the war of the Spanish Succession, when Venice, being hard pressed, attempted to force the Sette Comuni to send a small contingent, the Reggenza flatly refused. At the same time, many men enlisted as volunteers to help Venice in her struggle against the Turks, or even sent money and provisions at critical moments.

But even if every word of the German dialect should be forgotten, every document lost, and the last inscription effaced, one could still feel sure that strong Teutonic influences had been at work in the Sette Comuni, by reason of the system of common ownership of field and forest, which still maintains itself there. Here is a sign and symbol which no student can mistake.

By far the greater part of the territory is property of the Sette Comuni as a whole,—a large zone, consisting of forests and pastures, stretching along the borders of the Tirol. Here we have what is virtually an-old fashioned Teutonic Mark, in which every householder has an equal right. It is administered by the Spettabile Consorzio dei Sette Comuni, composed of seven members,—a body, which is the lineal descendant of the Reggenza of Venetian days.

This Consorzio administers the common fields and forests, leases them to users, and distributes an annual dividend to each of the Seven Communities, according to a ratio of long standing. The dividend amounts to about 50,000 lire, and represents a very handsome revenue for the little villages.

Unfortunately, there is talk in Asiago of abolishing the Consorzio, showing that the tide of centralization is at work there, as elsewhere in Italy. Should the public ownership of fields and forests be converted into private ownership, the last Teutonic trace will have vanished, and there will be nothing to distinguish the Sette Comuni from neighboring villages in Alpine Italy, or in the southern Tirol, except the noble tableland on which these communities lie.

MOUNTAIN STRUCTURES OF PENNSYLVANIA.

BY

A. P. CHITTENDEN.

Hitherto it has commonly been considered, and is even stated by the text books, that synclinal mountains are the predominant type in regions where the folded rocks have been deeply denuded. But during the last few months, the mountains of the Appalachian District of Pennsylvania have been studied with some care; and the writer has come to an opinion concerning their structural character that is at variance with the belief hitherto held. The following paragraphs contain a synopsis of the conditions of these mountains and of the explanation of their origin and forms.

Professor Davis * shows that the mountains in Pennsylvania consist of a series of ridges rising above a plain, below the level of which are the valleys dissected by rivers. This relation of parts is seen in Figure 1.



Dana, after speaking of the steps in the formation of the Appalachian Mountain Range, says, under the heading "The Relations of Mountain-ranges to Denudation," † "Carving, gouging and levelling through denudation, go on very rapidly in elevated regions of even a moderate amount of rain, and have gone on through long ages, since the rocks were made, so that the original forms of the anticlines and synclines of mountain ranges have disappeared, generally leaving ridges where synclines once existed. . . . The greater valleys are made along anticlines because of the profound longitudinal fracturing of their summits in consequence of the tension produced by the upward bending of the strata. This leaves the intervening synclinal belt as the course of the mountain ridges."

Sir Archibald Geikie treats the subject as follows: ‡ Speaking of

* "Rivers and Valleys of Pennsylvania."—Sketches.

† Dana, *Manual of Geology*, 4th Ed., p. 387.

‡ *Text Book of Geology*, p. 1022.

flexures, he illustrates the differences of inclination by the Jura and the Appalachians, and says: "It will usually be observed that the surface of the ground does not strictly conform for more than a short distance to the surface of any one bed; but that on the contrary it passes across the edges of successive beds. This relation—so striking a proof of the extent to which the surface of the land has suffered from denudation—may be followed through successive phases, until the original superficial contours are exactly reversed, the ridges running along the lines of syncline and the valley along the lines of anticline. Among the older rocks of the earth's crust, which have been exposed alike to curvature and prolonged denudation, this reversal may be considered to be the rule rather than the exception." Geikie's diagram, referred to in this connection, is a section across the folded rocks of the Appalachian Chain, in which the synclinal ridges are represented as predominant.

Influenced by these writers, as authorities, Hinman, in his school book, *Eclectic Physical Geography*, carries the idea still further. It is to be noticed also that this part of his work stands under the approval of Dutton. Hinman first explains very well in what manner the crests of folded strata are worn down more rapidly than the troughs, and leads up to the point that in the older mountains, such as the Appalachians, this process has gone on so far that one would reasonably expect the occurrence of the present ranges along the troughs of the original folds. In his own words: "In younger mountains, such as the Jura, the tops of the folds have not yet been so greatly lowered, but by the time they have suffered erosion as long as the Appalachians, the present position of mountains and valleys will have been reversed."

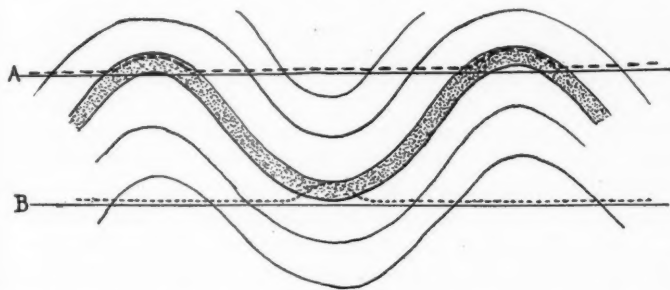
Ralph S. Tarr, speaking of old mountains, or folds which have undergone much denudation, says:* "In these low and much-worn mountains the more elevated parts are always those of hard rocks, while most of the large valleys are situated in the layers of soft strata. In such cases, and in fact even before denudation has proceeded so far, anticlines, which were originally mountains, are often worn down to valleys and synclinal valleys are transformed to mountains. Not only is this true here [in the 'old hills of Connecticut, Rhode Island and Massachusetts], but many of the Appalachian ranges are synclines."

From these illustrations from authorities it is clear that the prevailing opinion is that it is quite the proper thing that erosion should produce synclinal mountains and anticlinal valleys.

* *Elementary Geology* (1897), p. 309.

Let us look at the process of land sculpture more in detail, however, in a folded region such as the Appalachians.

The ultimate form of land sculpture is, of course, the base-level plain. Whatever its structure, every surface must be reduced to this level, if time be allowed,—and this constitutes its final form. But is it essential, as the writers mentioned would have us suppose, that in the late forms assumed in the process of base-levelling, there should be synclinal mountains and anticlinal valleys? The chief factors in determining the mountain structure are:—*the altitude of base-level, the resisting powers of the structure, and the time and stage of dissection.** Thus to produce a synclinal mountain it is requisite that the position of base-level be just below the level of the trough formed by the hard beds. This relation of base-level to structure is seen by the diagram (Fig. 2), where B is the base-level, and the



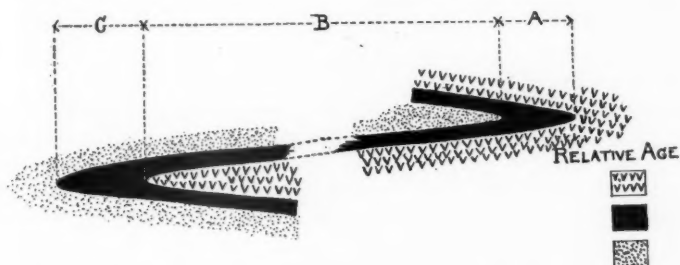
dotted stratum is the hard bed. Here the quick erosion, afforded on the lower soft beds, which are discovered by the breaking of the anticlinal crests, will soon cause the chief water-courses to abandon the synclinal axes they had before followed, and excavate valleys along the axes of the anticlines. As a result, the late form, represented by the dotted lines, will consist of an inversion of the original structural surface.

But suppose the base-level to be at A, a little below the arches of the hard bed. It is evident that the late forms resulting from erosion will consist of broad synclinal lowlands, between anticlinal ridges, as indicated by the broken line.

A position of base-level, however, would be more likely to occur somewhere between A and B. Let us look now at the geology of Pennsylvania, a field structurally better suited to the inquiry than any other part of the Appalachians, and see if this more natural

* W. M. Davis; Science, XII, 320.

prevalence of the different mountain types of Pennsylvania has been determined by measurements, made from the geological map by J. P. Lesley, 2d Pa. Survey. The number of miles of synclinal, anticlinal and monoclinal mountains has been obtained, the terms being applied as shown in Figure 5.



The black is the hard stratum, or ridge-maker, and the portion of its outcrop, A, is considered an anticline, the part B a monocline, and the part C a syncline. Wherever the Medina sandstone, or the Pocono sandstone, and to a certain extent the Pottsville conglomerate outcrop, mountains occur. As a rule, all the outcrops measured are recognized as mountain ridges under local names, as shown in the text of the description of counties, even where the outcrops in their close turns are very near together.

The Medina has 1,200 miles of outcrops. Of these 756 miles are monoclines, 271 miles are anticlines, and 173 miles are synclines. Of the Pocono, 436 miles outcrop in the form of ridges, of which 359 are monoclines, 45 are anticlines, and 32 are synclines. The Pocono and Pottsville form ridges together to the amount of 69 miles, of which 64 miles are monoclinal and 5 miles synclinal. The Pottsville has 202 miles of outcrops as mountains, 149 miles being monoclinal, 35 miles synclinal, and 18 miles anticlinal. But in the coal region, the Pottsville mountains of monoclinal structure are not so definitely marked off from one another as the Medina monoclinals of other portions of the State. The larger portions of the high-ground areas of the coal region are unquestionably of synclinal structure; but those parts, which, as a rule, are recognized as the mountains, are prevailingly monoclinal, as the figures show.

The outcrops at the edge of the Alleghany Plateau, at Laurel Hill, Chestnut Ridge, Pocono Plateau, and Broad Top, have not been considered, as they do not properly belong to the type of mountains.

Represented graphically, the predominance of structure in the Pennsylvania Appalachians is clearly shown in Figure 6.

MONOCLINAL _____ 1333

ANTICLINAL 334

SYNCLINAL 245

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The possible limit of error in the measurements, shown by the lowest line, can do nothing to change the relation of these lines to one another.

This result of facts is really only what we could expect were we to consider the case from the point of view of the base-level. The synclinal mountain is *not* a necessary or even a general result, and is far from being the prevailing type of mountains due to denudation in this district. In connection with the factor of time, the mountain forms obtained are simply the result of the accidental position of hard beds in relation to the controlling base-level.

A. PERCIVAL CHITTENDEN.

CAMBRIDGE, MASS., MAY, 1897.

THE ADMINISTRATION OF THE FORESTS OF THE PUBLIC DOMAIN.

BY

HENRY GANNETT.

In that part of the country lying east of the Great Plains the Government has practically disposed of all its forest lands. Indeed, in several of the States of the Mississippi Valley, Illinois, Indiana, Iowa and Ohio, the United States has parted title to all of the lands which it once held. In all the other States east of the Great Plains in which the United States once owned land, it still retains only 26,822 square miles, or five and one-quarter per cent. of their total area. Three-fifths of this area is in the two States of Arkansas and Minnesota. In Arkansas 7,238 square miles, or 13.64% of its surface, still remain in the hands of the Government, and consist of small areas widely scattered. In Minnesota the United States still owns 8,787 square miles, or 11.9% of the State. This area lies mainly in the northern part of the State, a great portion of it being in one body, and all of it being heavily timbered.

In the States of the Cordilleran region the situation is entirely different, the proportion still owned by the Government being much larger, ranging from 49% in Washington to 95.3% in Nevada. In these States the areas which have been alienated by the Government consist, in the main, of valley lands, which, as a rule, are not forested. Thus, in California the lands in private ownership lie mainly in the great Sacramento and San Joaquin valley, and in the valleys among the Coast ranges, the tracts which have been taken up in the timbered region of the Sierra being small and few. In Oregon the greater portion of the alienated land is in the Willamette Valley, which is only partially timbered. In Colorado the lands which have been taken up are mainly upon the plains at the east base of the mountains and in small areas in the mountain valleys. The mountain lands, which are the timbered lands of this State, have been almost untouched by the settler.

The forests of the Cordilleran region are principally found upon the mountains and high plateaux, the valleys and plains being without forest covering. In the main, the forests in this region are sparse and composed of small trees, principally conifers. Such is

the case with the forests of Colorado, New Mexico and Utah. In Arizona, however, upon the borders of the Mogollon plateau and about the San Francisco Mountains, extending thence northward across the Colorado River, is a forest of magnificent timber, covering an area of several thousand square miles. In the Sierra Nevada also is a large body of fine timber, but the most extensive and valuable forest of the West is that which covers the northern and coast ranges of California, the Coast Ranges and Cascade Range of Oregon and Washington, the mountains in the northeastern part of the latter State, and the Rocky Mountains in western Montana, northeastern Idaho and the Yellowstone Park. In Oregon, Washington and northern California these forests are very dense, composed in the main of large and valuable trees, and constituting one of the most important sources of lumber supply which this country possesses. The distribution of forests in the Cordilleran region is shown upon the accompanying map.

The use and application of the word "forest" in this connection requires explanation. It is here applied only to timber of merchantable size, such timber as is suitable for saw logs. It does not include such as is useful only for fire wood, fence rails, posts, etc., nor does it include mezquite, piñon, cedar or quaking aspen. The areas covered by these species would extend greatly the wooded areas of the West; indeed, would more than double them, and for all supposed influence upon climate, soil erosion, etc., such a tree covering is as potent for good as is the larger growth.

The influences which induce this distribution of forest over the Western country are, of course, climatic, and consist mainly in the rainfall; indeed, a rainfall map is a forest map. The heavy timber growth in the Northwest accompanies the well-known heavy rainfall, and the presence of timber upon the high mountains and plateaux accompanies the heavy rainfall upon these regions. In those parts of the arid region which are now timbered the amount of rainfall is barely sufficient to induce tree growth, and if the timber were destroyed it is doubtful whether, with the present supply of moisture, it would ever restore itself without artificial encouragement. In the Northwest and in the Eastern States, where the rainfall is ample for tree growth, such growth restores itself promptly when the forests, either by burning or cutting, are destroyed, but such is not the case in the arid regions. If it is desirable, therefore, that forests be perpetuated in this region they must be protected.

To the question whether it is desirable to maintain the forests of this region, there can be but one answer. Forests should be

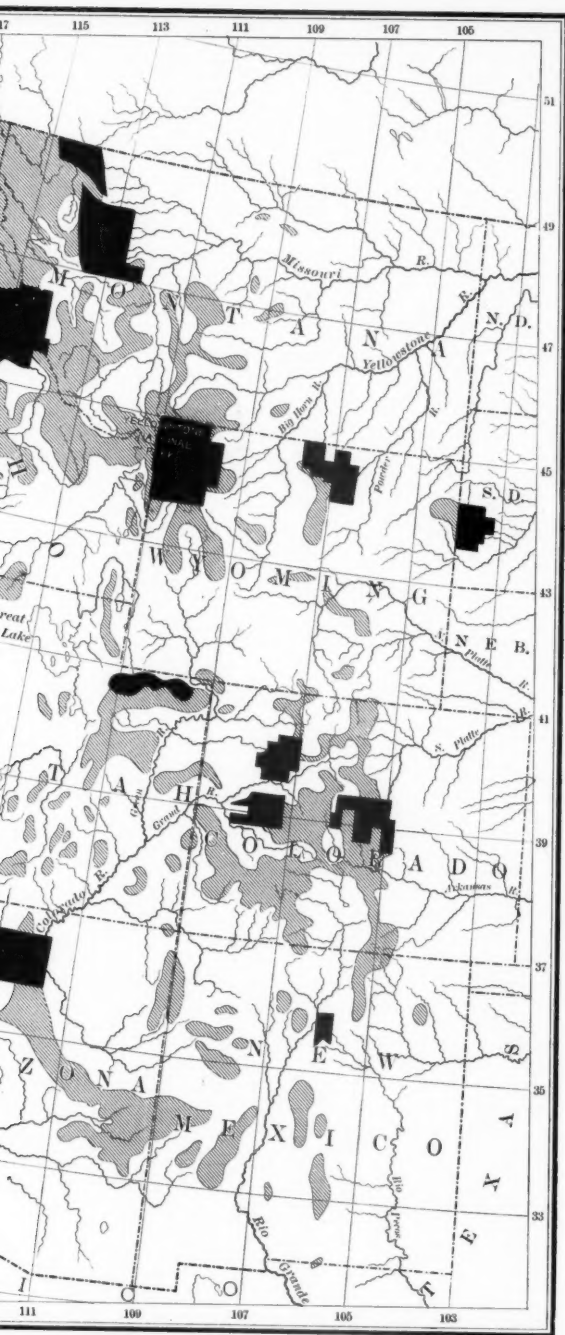
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WESTERN FOREST LAND AND FOREST RESERVES.

maintained, chiefly to provide continuous local supplies of timber. Timber is too bulky and cheap a commodity to bear long carriage. It should be produced as nearly as possible in the locality in which it is consumed. For this reason, if for no other, the forests of the West should be protected from all sources of waste, and perpetuated, if possible, while at the same time supplying local needs.

The physical and climatic aspects of the forest are little known. The influence of forests upon rainfall, humidity, temperature, the flow and regimen of streams has been widely discussed, but most of the discussion has been purely theoretical. Such data as we have indicate that forests have no appreciable climatic influence. Whether they have an influence upon the flow and regimen of streams has never been proved, although the popular belief is that they have a beneficial influence. However this may be, the necessity of maintaining local supplies of timber affords a sufficient motive for maintaining our Western forests.

The enemies of the forest are two in number; at least there are but two which are of importance, fire and the axe. Of these the more disastrous by far is the former. We know approximately the amount of destruction by the axe, but we have no means of even estimating that by fire. Such estimates as have been made are greatly exaggerated, but they suffice to show that the destruction is enormous, and means should be found for its prevention. On the other hand, the cutting of timber is a necessity of civilization. It is a foregone conclusion that it must go on, constantly increasing in amount. The cutting of timber, however, should be controlled, so far as practicable to do so, by such regulations as will insure, if possible, a continuous supply. Wasteful methods should be discouraged or prohibited, and mature trees only should be cut.

We know very little of our timber supply; indeed, the only data concerning it which have ever been collected are furnished by the investigation made by the Tenth Census, under Prof. C. S. Sargent, and this was by no means complete, since it related only to certain species in certain areas. All the discussion and agitation upon the subject of our forests and timber supply, which have been going on for generations, have had little basis of fact. Even the area occupied by our timber crop is unknown probably to the extent of 50%. We do not know whether 25% or 37% of the area of the country is woodland. Still less idea have we concerning the amount of standing timber, suitable for commercial purposes, upon these areas. Of the supply of timber of certain species our information is woefully at fault. The case of the white pine supply, to which considerable

attention has been given, is one in point. In 1880, after what was regarded as a quite full investigation, it was reported that the supply was sufficient to last but eight years longer, but white pine is still in the market, and its price has not greatly appreciated, and this year it is reported that the supply is still sufficient for five or six years longer, this statement being based, however, upon the guesses of certain State officials of Minnesota, Wisconsin and Michigan.

It is this want of data which has made it possible for sentiment-alists to gain a following in their absurd statements regarding the condition of our forests, and, upon the other hand, it has prevented reasonable, practical men, who are in a position to regulate these matters, from taking action upon them.

At present there is no means provided by law whereby timber-land or the timber upon the land can be obtained from the Govern-ment in large quantities; in other words, there is no lawful means by which saw mills, the great mines and other industrial enterprises can obtain supplies of lumber from the Government lands. It is true that settlers are permitted to cut timber upon Government lands for household purposes, fencing, etc., and that in the States of the extreme Northwest settlers are permitted to purchase timber lands from the Government, at \$2.50 per acre, to the extent of a quarter section each. The lumbermen are therefore driven to the alternative of purchasing land from railroads or settlers, of enter-ing timber land fraudulently or of stealing timber from the Govern-ment domain. That vast amounts have been thus stolen, it is unnecessary to add, and that the stealing goes on continually, with little hindrance from Federal authorities, is perfectly well known. However this may be condemned, the fact must not be lost sight of that the people of this region are, in a certain way, driven to crime by the negligence of our law-makers in failing to provide a remedy by law. This demoralizing state of things should be brought to a speedy end.

In order to check the rapid destruction of timber in the far West, Congress has been urged for many years by representatives of the Division of Forestry of the Department of Agriculture, and of the American Forestry Association, to adopt restrictive legisla-tion. The first fruits borne by this agitation consisted in the pas-sage, on March 3, 1891, of a bill providing that the Government should own and hold in perpetuity certain lands designated as forest lands. This bill runs as follows:

"That the President of the United States may, from time to time, set apart and reserve in any State or Territory having public land bearing forests, in any part of

the public lands, wholly or in part covered with timber or undergrowth, whether of commercial value or not, as public reservations, and the President shall, by public proclamation, declare the establishment of such reservations and the limits thereof."

There was coupled with this legislation no provision for administering these lands, or regulating the cutting of timber upon them, but the bill simply gave the President authority to set aside and reserve them. Under this authority Presidents Harrison and Cleveland did, from time to time, declare certain areas reserved by Executive proclamation, the whole amounting, in the early part of the latter's administration, to some seventeen and a half million acres.

Further agitation by the friends of this reserve policy resulted, in the fall of 1895, in a request from the Secretary of the Interior to the National Academy of Sciences that it consider the question of a forest policy and report thereon. The Academy thereupon appointed a Committee for this purpose, and an appropriation of \$25,000 was made by Congress to pay the expenses of the inquiry. After spending the summer of 1896 in the West, and examining most of the forested regions of that part of the country, the Committee made a preliminary report to the Secretary of the Interior, recommending thirteen additional reservations, comprising some twenty million acres, thus more than doubling the reserved area, and these reserves were created by Executive order issued on February 22, 1897. The full report of this Committee was made on May 1, 1897.

The location and approximate area and extent of all the reserves are shown upon the map, being superimposed upon the representations of forests.

The following are the leading characteristics of the reserves:

The Black Hills Reserve, located in the southwestern part of South Dakota, has an area of 967,630 acres, or about 1,500 square miles, and includes the higher portion of the Black Hills, and most of the valuable timber of the State. It is traversed from north to south by a branch of the Burlington and Missouri River Railroad, and contains numerous small towns and many mines, none of which, however, are of great importance. There are many squatters scattered over it, located mainly in the valleys, and the timber is in extensive use by mining companies, particularly the Homestake Company, which uses vast quantities for mine timbering and for fire wood.

In Wyoming there are three reserves, known as the Big Horn, Yellowstone Park and Teton reserves. The first of these includes the highest portion of the Big Horn Mountains, in the northern part of the State, extending on the east down to the edge of the plain. It has an estimated area of 1,198,080 acres or about 1,870

square miles. The land embraced in this reserve ranges in altitude up to nearly 12,000 feet above sea, and contains the sources of many streams flowing to Yellowstone and Big Horn rivers. Settlement upon the area of this reservation has thus far been trifling. The timber is not large and is of use mainly for domestic and farm purposes.

The reservation east of Yellowstone National Park is known as Yellowstone Park Reserve, and has an estimated area of 1,826 square miles, or 1,168,640 acres. It includes the portion of the high mountains known as the Absaroka Range, which divides the waters of Yellowstone River from those of Big Horn River. The range is extremely rugged and the timber upon it is not commercially of great value.

The Teton reservation lies south of the Yellowstone National Park, and includes the upper portion of the valley known as Jackson's Hole, with the Teton Range upon the west and the Grosventres upon the east. The area is 829,440 acres, or about 1,300 square miles. There is some valuable timber upon the lower mountains, but the higher mountains are bare or covered with shrub growth. The amount of settlement is trifling.

There are two reserves in Montana, besides a portion of a third, all in the western part of the State. The most northern of these is known as Flat Head Reserve, which extends from near the line of the Great Northern Railroad to the international boundary, with an estimated area of 1,382,400 acres, or about 2,160 square miles. It includes the Front Range of the Rocky Mountains, from the summit down either flank to the base. Within it are many high mountains, several of which are covered with glaciers. Little settlement has been effected upon it, that little mainly near the western border.

South of the latter is the Lewis and Clark Reserve, which embraces both slopes of the Front Range of the Rocky Mountains, extending from the plains on the east to the shores of Flathead Lake on the west, and embracing an area of 2,926,080 acres, or about 4,570 square miles. Its forests are of considerable value commercially, and settlement upon it thus far has been slight.

Idaho has two reserves, the Priest River Reserve on the north, and the Bitter Root Reserve on the south. The former includes practically the drainage basin of Priest Lake and River. It has an estimated area of 645,120 acres, or 1,000 square miles, five-sixths of which is in Idaho, the remainder being in Washington. This reserve includes one of the most valuable bodies of timber to be found in the interior of the continent, composed of Western white pine, tamarack, cedar and spruce, all of large size.

The Bitter Root Reserve includes a large area of country about the headwaters of Salmon and Clearwater rivers. It has an area of 4,147,200 acres, or about 6,480 square miles, nearly all of which is in Idaho, the remainder being upon the east side of Bitter Root Mountains in Montana. It is a high, rugged mountain region, covered with forests of yellow and other pines, spruce, fir and cedar, which are of great value, especially to the mining industries of the neighborhood.

In Washington are three reserves, known as the Washington, Olympic and Mount Rainier Forest reserves. The first of these is in the northern portion of the State, its northern limit being the international boundary. It has an area of 3,594,240 acres, or about 5,620 square miles. It includes both slopes of the Cascade Range and is entirely covered with dense forests of the greatest commercial value.

The Olympic Reserve includes most of the area between Puget Sound and the Pacific coast, having an area of 2,188,800 acres, or 3,420 square miles. It includes the Olympic Mountains, a rugged range rising in its summits to altitudes of 8,000 feet, and densely clothed with forests of the greatest commercial importance, which are as yet hardly touched by the axe. It contains no agricultural lands, nor have any minerals yet been discovered upon it, still a large number of entries have been made for the use of timber.

The Mount Rainier Reserve includes what was formerly known as the Pacific Reserve, and comprises much of the southern half of the Cascade Range in the State of Washington. It includes an area of 2,234,880 acres, or 3,510 square miles. Within it is Mount Rainier, rising to an altitude of 14,500 feet, and covered with glaciers. Excepting such portions of the reserve as rise above the timber line it is heavily forested, and its forests are of the first commercial importance.

Practically the entire Cascade Range in Oregon has been reserved in a series of reservations extending from Columbia River nearly to the south boundary of the State. These reserves, which are practically one, are known as Bull Run and Cascade Range, and comprise an estimated area of 4,700,000 acres. With the exception of the extinct volcanoes which rise above timber line, this region is heavily forested with timber of great commercial value.

In southwest Oregon, near the City of Ashland, is a small reservation, comprising about a township.

In California there are a number of reserves, Stanislaus, Sierra, San Bernardino, San Gabriel, San Jacinto and Trabuco Cañon.

The Stanislaus and Sierra reserves, together with the Yosemite and Sequoia National Parks, form a continuous reserve, comprising the highest portion of the Sierra Nevada from latitude 38.30 to the southern end of the range. Their collective area is 6,144,000 acres, or 9,600 square miles. The timber in these reserves is not of commercial importance, but owing to the fact that the agriculture of the San Joaquin Valley is dependent upon streams which head in this region, the protection of the forest cover is of great economic value.

The San Gabriel and San Bernardino reserves are in southern California, and being conterminous, they include most of the mountain range north of the Los Angeles and San Bernardino valley. These mountains contain but little timber, and that is not of commercial importance, but they are covered with dense chaparral. They include an area of 1,152,000 acres, or about 1,800 square miles.

The San Jacinto Reserve includes the higher portion of the San Jacinto Mountains south of San Bernardino. The area is 737,280 acres, or about 1,150 square miles. These mountains also contain very little timber, being almost entirely covered with chaparral.

The Trabuco Cañon Reserve lies near the coast in southern California, a short distance southeast of Los Angeles, and comprises a portion of the Santa Ana Mountains. Its area is about 100 square miles, or 64,000 acres. It contains no forests whatever, but is covered with chaparral.

It is not easy to see what motive actuated those who urged the establishment of these last four reserves. They contain no timber of commercial importance, but are covered with dense chaparral. This covering of brush is, of course, of value in regulating the flow of streams from these mountains, but since it is otherwise of no earthly use, it is not likely to be disturbed. It would be quite as reasonable to reserve tracts of sagebrush or greasewood.

Utah contains but one reserve, known as the Uinta Reserve. Its area is 960,000 acres, or about 1,500 square miles. It is located in the northeastern part of the State, and includes the highest portion of Uinta Mountains, rising to altitudes of 13,700 feet. The range is sparsely timbered with spruce, which will doubtless be of commercial importance in the future.

In Arizona one area only has been reserved, under the name of the Grand Cañon Reserve. This is a rectangular area in the northern part of the Territory, including a portion of the Grand Cañon of the Colorado. Its area is 1,851,520 acres, or 2,910 square miles.

It is timbered mainly with an open growth of piñons and cedars, with some pine on the plateau on the northern side of the Colorado.

There are several reserves in Colorado, known as Pike's Peak, Plum Creek and South Platte reserves, which three form practically one reserve, White River Reserve, in the northwestern part of the State, and Battlement Mesa Reserve, in the western portion, between Grand and Gunnison rivers.

The first three above mentioned include the mountain region from Pike's Peak northward, the Front Range and the ranges east and west of South Park. The area of the three reserves collectively is 1,308,800 acres, or 2,045 square miles. The region is nowhere heavily timbered, but the timber is of great local importance to mines and the settlements of adjacent regions.

White River Reserve has an area of 1,280,000 acres, or 2,000 square miles. It includes a group of high plateaux, rising to altitudes of 11,000 or 12,000 feet above sea, about the sources of White River, a branch of Green River, and tributary to the Colorado. These plateaux are covered with heavy forests.

Battlement Mesa Reserve has an area of 696,000 acres, or 1,400 square miles. It is mainly included in high plateaux, whose summits are 10,000 feet above the sea, covered with a sparse growth of timber, of no great commercial importance.

In New Mexico there is but one reserve, known as Pecos River Reserve. It includes a portion of the Sangre de Cristo Range northeast of Santa Fé. Its area is 304,000 acres, or 475 square miles. It is sparsely timbered, and its forests are of only local economic importance.

These reserves collectively comprise an area estimated at 38,880,000 acres, or over 60,000 square miles.

The following table summarizes the areas and adds the proportion of the timbered area of each State which has been reserved, taken from the Washington Letter in the BULLETIN for March, 1897:

	AREA SQUARE MILES.	PERCENTAGE TIMBERED AREA OF STATE.
ARIZONA:		
Grand Cañon Reserve.....	2,910	9.90
CALIFORNIA:		
Stanislaus and Sierra Reserves, Yosemite and Sequoia National Parks.....	9,600	
San Gabriel and San Bernardino Reserves.....	1,800	
San Jacinto Reserve.....	1,150	
Trabuco Cañon Reserve.....	100	
Total.....	12,650	15.26

	AREA SQUARE MILES.	PERCENTAGE TIMBERED AREA OF STATE.
COLORADO:		
Pike's Peak, Plum Creek and South Platte Reserves.....	2,045	
White River Reserve.....	2,000	
Battlement Mesa Reserve.....	1,400	
Total.....	5,445	12.61
IDAHO:		
Priest River Reserve (in part).....	864	
Bitter Root Reserve (in part).....	5,400	
Total.....	6,264	12.37
MONTANA:		
Flathead.....	2,160	
Lewis & Clark.....	4,570	
Bitter Root (in part).....	1,080	
Total.....	7,810	14.04
NEW MEXICO:		
Pecos River Reserve.....	475	0.96
OREGON:		
Bull Run and Cascade Range.....	7,344	
Ashland.....	36	
Total.....	7,380	12.57
SOUTH DAKOTA:		
Black Hills Reserve.....	1,500	96.76
UTAH:		
Uinta Reserve.....	1,500	3.94
WASHINGTON:		
Washington Reserve.....	5,620	
Olympic Reserve.....	3,420	
Mount Rainier.....	3,510	
Priest River (in part).....	136	
Total.....	12,686	25.00
WYOMING:		
Big Horn Reserve.....	1,870	
Yellowstone Park Reserve.....	1,826	
Teton Reserve.....	1,300	
Total.....	4,996	18.26

Several of these reserves are either wholly or in part within the limits of railway land grants. Lewis and Clark and Priest River Reserves lie almost wholly within the grant to the Northern Pacific Railway. The northern portion of the Mount Rainier Reserve also falls within it. The southern half of the Grand Cañon Reserve is within the limits of the grant to the Atlantic & Pacific Railroad, and

large portions of the reserves in southern California are within the grant to the Southern Pacific Road. Within these areas the railroads own alternate sections. In these cases it is proposed to allow the railroads to select lands in other localities to recoup themselves for the lands thus reserved. It is, however, doubtful whether the railroads will be willing to make the exchange, in view of the fact that practically all of the public lands which are of value, excepting the forest lands, have already passed into private hands.

In looking over the list of reserves one is struck particularly by the omissions. The finest body of timber in the West, excepting in Oregon, Washington and northern California, is that upon the San Francisco and Mogollon plateau. Here is an open forest covering thousands of square miles, composed of magnificent trees, mainly Douglas pines. This forest grows in an arid region, and if destroyed could never recover itself. It protects the headwaters of the northern branches of Gila River, which waters the garden of Arizona. No part of this region has been reserved.

The finest timber region of California is in the northern Sierra and the northern Coast Ranges. Here are the sugar pines and the redwoods; but none of this region has been reserved. The Coast Ranges of Oregon contain some of the finest timber of the State, but no reserve has been established there. On the other hand, we find, as was stated above, reservations established in the San Bernardino and San Jacinto Mountains, where there is no timber, and where the vegetation is not in the slightest danger of being injured.

The purpose of those who urged the reservation of these areas from sale or settlement, was to effect thereby a cessation of forest fires and the regulation of cutting of timber. It was not, as is commonly supposed, the withdrawal of them as a source of supply of lumber, but decidedly the reverse. It was expected that Congress would provide immediately for their use as a source of timber, under rules and regulations whereby the cutting would be so regulated as to make them a perennial source of lumber supply. To this end bill after bill has been introduced and pushed to various stages during the past six years, but until the present session no such bill has been passed and no authority has been given the Secretary of the Interior for making any such provision. The list of attempts at securing this much-needed legislation is long, and meantime the reserves have lain idle and unprotected, of no service to any one, and annually scourged by fire.

The thirteen reserves established by Executive order of February 22, 1897, include several areas of great importance to local

interests, and the withdrawal of these areas created at once great opposition. Under this pressure the Fifty-fourth Congress, in its last session, attached a rider to the Sundry Civil Bill abolishing all reserves. This bill failed of approval by the President, but the matter was taken up again in the extraordinary session of the Fifty-fifth Congress, and all the probabilities were in favor of undoing the work of the friends of the forest by the abolition of the entire reserve system. A compromise was, however, effected in the form of an amendment to the Sundry Civil Bill which, in substance, provided that the order of February 22, 1897, creating thirteen reserves, be suspended until March 1, 1898, and that meantime a survey of the reserves be made, for which the sum of \$150,000 was appropriated, and that a Forestry Bureau be organized in the Department of the Interior for the purpose of administering the reserves. This amendment passed the House and the Senate by a narrow margin of votes, and has become a law.

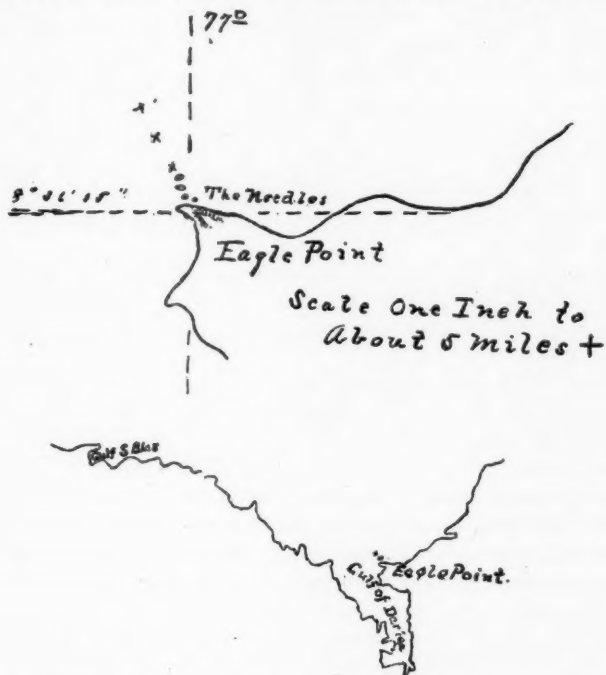
Under its provisions topographic forestry surveys are to be made by the Geological Survey, the reserves are to be subdivided, and the agricultural tracts within their boundaries are to be excluded. A forest policy is to be planned and the necessary organization for administering the reserves is to be created.

It is the hope of all reasonable men who take an interest in this matter, that the ultimate result of this agitation will be the withdrawal from entry and sale of all lands belonging to the Government which are of more value for their timber than for agricultural or mining purposes; that they will be protected from fire or other destructive agencies, and that the cutting of timber upon them will be regulated in such way as to maintain a continuous supply of lumber. While such action may be at first opposed by Western people, as working a hardship upon them, it seems clear that in time the wisdom of such provisions will become apparent and such a forest policy will receive their hearty support.

HENRY GANNETT.

NOTES OF SOME DANGEROUS ROCKS OFF THE GULF OF DARIEN.

In a recent exploration of the regions to the south of the Gulf of Darien I noted while on my way to that country a series of sunken rocks off Eagle Point. These rocks are locally called the Needles, and are considered very dangerous to the small craft called *barcontonas*, trading along the Colombian coast. Occasionally a larger vessel passes Eagle Point, and trading ships, after



OUTLINE OF POSITION OF SUNKEN ROCKS OFF EAGLE POINT AT THE ENTRANCE OF THE GULF OF DARIEN.

All water above $8^{\circ} 36' 15''$ north and in sight of Eagle Point may be considered dangerous.

Approximate position of rocks marked by ooo. Possible extension of rocks as noted by waves breaking in a quiet sea marked by xxx.

working their way along the San Blas coast, are sometimes seen on their way to Cartagena. The country is a rich one, and it is

probable that foreign sails will some day be more frequent in these waters; and if there should be a war at any time affecting American interests, these regions would require careful watching, because of the ease with which supplies and munitions could be transported between the Atlantic and Pacific oceans *via* the Atrato and San Juan rivers of Colombia.

This gives a special interest to the waters off the Gulf of Darien. An examination of the charts of that region shows that the rocks off Eagle Point have been overlooked. A sand bank two fathoms under water is noted just off the Point, but all else is put down as deep soundings, and a commander would be justified in standing in close to shore and considering himself in very safe water; but in reality he would be in a most dangerous position.

Locally, it is claimed that these rocks extend for eight to ten miles off shore, and that many of them can scarcely be seen, especially when the tide is up. It can be stated with confidence that all water in sight of Eagle Point and above $8^{\circ} 36' 15''$ is dangerous. Approaching from the east, a careful watch should be maintained till the eastern side of the Gulf of Darien can be seen to the south below Eagle Point.

Going west, the rocks are probably passed when the ridges and sand banks along Eagle Point are to the stern of the ship, but the position on the eastern side may be dangerous anywhere in sight of the Point.

When I saw these rocks the water was quiet. We were making our way along the coast in a dilapidated steam-tug, and though the sailors were a careless lot, at this dangerous point the engine was slowed down. Presently I saw a ripple in the water just beside the tug as if a large fish had come near the surface, a wave rose up and broke; that was all. After we had gone a little further, I saw a larger ripple, then suddenly fine, slender-pointed rocks appeared out of the water, the waves broke around them, and they disappeared again.

I could see waves rising up at intervals toward the northwest, indicating the presence of rocks, and should say that the native sailors are correct in claiming that at this point dangerous water is found for some distance off shore.

After the tug had made its way carefully for a time, we saw the water inside Eagle Point, and went on again at such speed as could be made, having passed the rocks in safety.

FRANCIS CHILD NICHOLAS.

NEW YORK, MAY 12, '97.

WASHINGTON LETTER.

WASHINGTON, JUNE 21, 1897.

APPROPRIATIONS.—The large appropriation bills left over from the last Congress have finally been passed, the one of chief interest from the standpoint of surveys and exploration—the Sundry Civil—being approved by the President on June 4. This enables the various organizations engaged in the prosecution of field work to present their plans and begin to put them into immediate execution. Chief among these are the Coast and Geodetic Survey, the Geological Survey with its various branches, the General Land Office and the Smithsonian Institution.

Under the Coast Survey there will be carried on during the summer the usual mapping of shore line and harbors on the Atlantic, Gulf and Pacific coasts, and in addition to this explorations in the waters of Alaska, including survey of the Aleutian Islands and examination of the mouth of Yukon River. The Trans-Continental line of precise levels has been taken up at a point in western Kansas near Hays and will be continued along the line of the Kansas Pacific Division of the Union Pacific Railroad westerly into Colorado, connecting probably with some of the points whose elevations have been determined by the vertical angles of the Trans-Continental triangulation. This latter has been practically completed, but a considerable amount of field work remains to be done in check determinations.

GEOLOGICAL SURVEY.—During the coming year the appropriation for this Survey and its various branches reaches the high-water mark of nearly \$970,000. The increase is due mainly to sums for surveys carried on in the subdivision and topographic mapping of the Indian Territory and for work connected with the examination of the forest reservations. The principal items are for topography \$175,000; for geology \$100,000; for map publication \$60,000; for forest reservation surveys \$150,000; hydrographic surveys \$50,000; Indian Territory \$100,000; and resurveys of lands of the Chickasaw Nation \$141,500. The amount of \$5,000 has been appropriated for examination of the mineral resources of Alaska, but this sum becomes available so late in the season that it will be impracticable to take up work during the coming summer.

Geologic work is, as in past years, widely distributed, typical

or important areas being under examination in nearly every State and section from New England to California. The economical features are made prominent, considerable attention being devoted to the coals of the Appalachian area, the iron ores of Lake Superior, the precious metals of the Rocky Mountain region and Pacific Coast and to the mineral wealth and building stones of all localities. Plans and operations are so directed that the results of the field work can be shown in general in the series of geologic atlas folios. In some cases, however, monographic studies are being conducted, such as that in hand by Dr. C. Willard Hayes for the southern Appalachian area considered as a whole in its physiography and geology.

TOPOGRAPHIC SURVEY.—The topographic parties of the Geological Survey have begun active work in nearly all the States. In the East the larger proportion of new maps will be those in New York, where co-operation with the State Engineer and Surveyor promises the early completion of the entire area. The area of at least three fifteen-minute sheets will be surveyed in the Adirondacks, the titles of these being, respectively, Indian Lake, Fulton Chain, and Wil-murt. In the western and central part of the State it is proposed to finish the Brockport, Hamlin, Onondaga, Cazenovia, and Salamanca sheets, while the changes in and around Greater New York necessitate the revision of the maps, the surveys for which were made nearly ten years ago. The area will be increased easterly by surveying the Oyster Bay and Hempstead sheets.

The plans outlined and already under execution enumerate a long series of States in which surveys are being conducted, not only in the Appalachian area, but also in the Mississippi Basin and far West. In the Vermillion iron district of Minnesota a strip of country will be contoured, also areas mapped adjacent to those already surveyed in the Dakotas, Kansas and Nebraska. In the vicinity of Chicago a revision will be made to show recent changes and additional work done both in the State of Illinois and in southerly Indiana. In Washington mapping will be continued, also in Oregon south of Coos Bay, and in Nevada near Silver Peak. In southern California it is proposed to complete a thirty-minute sheet south of Redlands and San Bernardino; in the vicinity of Denver triangulation will be continued northerly toward Greeley, affording control points for the completion of the large Denver map and for its extension along the thickly settled portions of the South Platte drainage.

HYDROGRAPHIC SURVEY.—The Division of Hydrography of the United States Geological Survey has begun active field work in the

measurement of surface streams and examination of sources of underground water. The river stations in various parts of the United States are being inspected, and measurements of spring floods obtained wherever practicable. In the East the principal river stations are along the Appalachians and near the fall line of the rivers extending from Pennsylvania southeasterly to Georgia and Alabama. In the West the observations are maintained principally for the purpose of ascertaining the water supply for irrigation, and the river stations are on the rivers coming from the Rocky Mountains and from the Sierra Nevada and Coast ranges. In Idaho, Oregon and Washington the number of river stations is being notably increased, owing to the demand for information bearing upon the development of new irrigation systems.

The results of operations of this hydrographic survey are shown in two series of publications; first the annual report forming a volume of the annual report of the Director of the Geological Survey, and, second, in pamphlets entitled "Water Supply and Irrigation Papers." The report for the last year's operations has just been sent to the Public Printer as Part III of the Eighteenth Annual Report of the Geological Survey. It is devoted for the most part to results of measurements and computations of the discharges of the streams during 1896. This is accompanied by a number of papers relating to the hydrography of particular areas. One of these is by Mr. Frank Leverett on the well waters of Indiana and Ohio, their character and mode of occurrence; another is by Mr. N. H. Darton on the artesian supply of South Dakota and its utilization, and a third by Mr. Robert T. Hill on the deep waters in the vicinity of San Antonio, Texas. There is also a profusely illustrated paper by Mr. James D. Schuyler on water storage and conservation of floods.

In the Water Supply and Irrigation series six papers are in print and six more in preparation. Most of these contain descriptions of the geography, geology and related hydrography of certain localities. The last paper (No. 12) gives a discussion of the Valley of Platte River in Nebraska and of adjacent areas, and is accompanied by a map which shows by conventional tints the depth from the surface to the water-bearing strata.

FOREST SURVEYS.—The Sundry Civil Act, approved, as noted above, on June 4, 1897, contains an appropriation of \$150,000 for the purpose of surveying forest reservations and determining their boundaries. The work will be done by the Geological Survey under regulations approved by the Secretary of the Interior. This

sum, although not sufficient for the complete mapping of the reservations, will probably suffice for the determination of the boundaries of some of the more important, especially of those from which supplies of timber are being drawn for mining purposes. It will be necessary to run out the exterior boundaries, following the conventional Land Office rectangular lines, and to occasionally locate some of the principal township and other corners within the reservation. Where considerable tracts of agricultural land, aggregating, say, a quarter of a township, or nine or ten square miles, lie within the exterior borders, it is probable that these areas will be sectionized; where, on the contrary, the land is extremely rough, triangulation points will be occupied, and the approximate location of township and ranges determined from these. The lines and points thus determined upon the ground will serve as part of the control for the topographic map, which will ultimately be made on a scale of two miles to the inch, showing the relief of the country and the cultural features, these maps being similar in appearance to the others now being issued by the Geological Survey.

In addition to the location of boundaries and the preparation of topographic sheets, a study of the character and value of the timber will be made, sufficient to determine in a general way the value of the forest in furnishing supplies of wood or as aiding in the conservation of waters. While the precise method of this examination has not been developed, it is probable that it will be done in a manner comparable to that of the timber cruising for timber companies, in which skilled men provided with light camping outfit traverse the country and estimate the stumpage. For the immediate purposes of the Government such an examination, carried on by skilled and intelligent men, will suffice and may form the basis for an administrative system. This latter has not been determined upon, but may be developed as one of the divisions of the General Land Office, the matters of surveying and mapping being left to the Geological Survey.

As far as practicable the results of the examination of the forest reserves will be shown upon maps, so that a clear, comprehensive view can be had of the whole matter. For this purpose the outlines of the wooded or forested areas will be shown in a manner similar to those of the forested areas of Connecticut and of the White Mountains, the maps of which have been issued by the Geological Survey. It is proposed to show the commercial character of the timber by varying tints of color, following some predetermined scale, so that the average number of feet, board measure, per acre

can be seen at a glance from the color of any particular area. In certain localities, as, for example, the Black Hills, it will be advisable to show also by a system of coloration of the map the distribution of important species of forest trees.

BIOLOGICAL SURVEY.—The Biological Survey of the Department of Agriculture under the charge of Dr. C. Hart Merriam has begun field work in various parts of the West with a number of field parties, particular attention being given to the States of Oregon and Washington. It is hoped that the results of this year will complete the preliminary work for these areas, and that two seasons more will practically finish the biologic map of the United States. A large amount of detailed work must of necessity be done, but the broad facts will probably be outlined by that time. A reconnoissance to finish an incomplete area is being made in the Boston Mountains in Indian Territory, and other field parties are examining the area near Pendennis, Kansas, and Valentine, Nebraska. Later work will be taken up in Salt Lake Basin along the Wasatch Range, and in Nevada from Carson Valley across to Tahoe and Donner lakes. Mr. Bailey, in general charge of the field work, is carrying the survey from Klamath Falls to Honey Lake, and another party has begun at Neah Bay, Washington, with the intention of working east and finally across the Cascade Range.

One problem of particular interest has been to trace the path by which the Sonoran fauna and flora progressed northerly from Nevada to the plains of the Columbia. Last season the Sonoran zone was traced northward to the vicinity of Klamath Lake, and it was at first inferred that this route extended to the north. Subsequent examination, however, showed the outlet in this direction to be cut off by high land, and that the Sonoran in this locality was merely a peninsula or outlying finger. The true outlet to the north was found to be through Alvord Desert to the east of Stein Mountain, this depression being the deepest in eastern Nevada. The Sonoran flora coming from the south up Quinn Valley passes over Alvord Desert and thence northerly by way of the valley of Malheur Lake. As data for the biologic map accumulate it is gratifying to note with what remarkable exactness one group of facts supports the deductions made from another. The matter has been put to severe tests by the construction of maps of the distribution of varieties of cereals, the data being collected and compiled independently of work done by the Biologic Survey. The life zones thus outlined coincide in every particular with those based

upon varieties of birds or animals, demonstrating that the laws governing the distribution of life are general in their operation.

The practical value of an accurate biologic map can scarcely be overestimated. It indicates that in certain zones various plants and animals cannot be expected to thrive. Guided by it the intelligent farmer should be saved expenditure of time and money in making experiments upon crops, where the environment is wholly unsuited to them. On the other hand it will indicate the areas subject to the ravages of destructive insects and similar pests, and also those that are exempted by their climatic conditions. In the matter of seed distribution it would be possible from the study of the biologic map to accomplish great economies, in preventing the sending of seeds of certain varieties to Congressional districts where the chances of growth are wholly against them.

BUREAU OF ETHNOLOGY.—The summer operations of this Bureau of the Smithsonian Institution include a further exploration of northern Arizona by Dr. J. Walter Fewkes, and work among the Kiowas of southern Oklahoma by Mr. James Mooney. The main energies of the Bureau are being devoted, however, to a completion of reports of results obtained during previous years, the attempt being made to present for publication a large amount of accumulated material. One of the largest pieces of work well under way is an encyclopædia of native Indian races, giving in as succinct form as possible a description of the various stocks and tribes, with their location, history, distinguishing traits and ethnic features. This work was begun originally as a dictionary of Indian names, but has grown in the making to a completeness which justifies its being considered encyclopædic in character.

Another project of geographic interest nearing completion is a report upon the land cessions to Indian tribes made since the origin of the Government. This includes schedules and maps giving the boundaries of the reservations at various periods. Many of these lines laid down in early days have governed the final location of State boundaries, and have thus become of great importance.

GEOGRAPHIC MODELS.—The project for a large model of the United States, upon a scale of about a foot to the mile, has been revived by Senator Cannon of Utah. He has reintroduced his joint resolution of last session, and is confident of its favorable consideration in committee and early passage by the Senate and House. This resolution provides merely for the creation of a commission of five to examine into and report to Congress upon the practicability,

advisability and cost of establishing near the City of Washington a ground map on such a scale as may be possible of construction upon the Potomac Flats, this map to reproduce in earth or other material the relief of the country, and upon this to be represented the forests, lakes, streams, towns, and other cultural features. It so happens that the Potomac Flats, which lie west of the Washington Monument and south of the White House, have a general outline similar to that of the whole country, and in other respects are adaptable for this purpose. The project for the appointment of this commission has been endorsed by prominent men and scientific organizations. A report upon the feasibility of the project will, if thoroughly prepared, be a valuable addition to geographic literature in discussing the value of models in geographic instruction, the methods of making these, and the results attained in various countries. Interest has been stimulated by the reports of large models now being constructed in Paris for the Exposition, and also of relief maps made in Japan. A considerable body of information is doubtless available, and if brought together may be of service in constructing models for use, not only in schools, but in general public instruction.

The New York State model, prepared primarily for the Museum at Albany, has been completed by Howell, and although on a small scale—twelve miles to an inch—enables one to form an excellent conception of the topography of the State as a whole. It is a matter of surprise to a person who has spent years in the study of geography and who is thoroughly familiar with a country or locality to discover how many new ideas are at once suggested by a comprehensive and carefully prepared model of what he has considered a well known area. The relative proportions of masses of mountains and of other general features often suffer a wonderful alteration when the accurately prepared model is studied. Besides the map of the State the relief map of Greater New York and vicinity has been completed from the combined topographic sheets of the Geological Survey. This offers many points of striking interest, especially in the ridges of the Palisades of the Hudson and in the broad marshes and lowlands near the harbor.

N.

RECORD OF GEOGRAPHICAL PROGRESS.

NORTH AMERICA.

GLACIERS OF THE UNITED STATES.—Mr. H. F. Reid says, in his second paper on "Variations of Glaciers" (*Jour. of Geol.*, No. 4, Vol. 5), that the evidence collected by Prof. Russell in 1892 shows that, in general, the glaciers of the United States are retreating, though a few glaciers are in a state of advance. The Malaspina glacier on the south side of the St. Elias range is, on the whole, retreating, but a part of it near the Yahtse River advanced in 1886, destroying trees; and the southeastern part, near Point Manby, has recently advanced about 1,700 feet, and again retreated. Muir Glacier, Alaska, which has been receding for a century or more, made a temporary advance of about 1,000 feet between 1890 and 1892, but in 1894 it had again retreated to its limit of 1890. This oscillation refers only to the water front of the glacier, for the sides have been steadily retreating. Information concerning three of the twelve or so glaciers on the steep slopes of Mount Rainier [Tacoma], which are from three to six miles long, *viz.*, Carbon glacier on the northern, Willis on the northwestern and Nisqually on the southern face of the mountain, show that they are steadily receding. The eight glaciers on Mount Hood are steadily diminishing. More systematic observations of some of the Pacific slope glaciers will begin this year.

LAKES WITH TWO OUTLETS IN NORTHEASTERN MINNESOTA.—Mr. U. S. Grant, of Minneapolis, gives information (*Amer. Geol.*, Vol. XIX, No. 6), concerning these lakes in Cook, Lake and St. Louis counties, Minnesota, obtained while he was engaged in field work for the Geological and Natural History Survey of Minnesota. Brulé Lake (elevation, 1,851 feet), twenty miles north of Lake Superior, is over eight miles long east and west, and averages a mile in width. One outlet is at the east and the other at the west end. They are approximately equal in volume and flow over rocky beds. The eastern stream is the Brulé River, which runs east-southeast for forty miles to Lake Superior. The western stream enters the Temperance River and travels over thirty miles before reaching Lake Superior. The writer names eleven other lakes and describes their double outlets. After the withdrawal of the ice sheet there were left some basins in the drift, in rock or in both, in each of which the water accumulated till it overflowed the

rim of the basin. In a few cases a basin had two points in its rim of the same altitude and lower than any other point, and thus a double outlet to the lake was formed.

TWO EXPEDITIONS TO MOUNT ST. ELIAS.—Mr. Henry G. Bryant, of Philadelphia, the successful explorer of the Grand Falls of Labrador, who with his party started for Mount St. Elias from Tacoma, in the latter part of May, wrote to us before his departure: "We hope to be in the field early in June. My plans are to attempt the ascent of Mount St. Elias and Mount Logan. As you know, this latter peak is credited with a height of 19,500 feet. [Mount St. Elias, 18,023 feet.] The first party that carries a mercurial barometer to the top may modify some of the existing determinations of heights. Should we be favored with good weather conditions and succeed in making these ascents and a good map of the region, my plans include an advance into the region northwest of Mount St. Elias and a descent of the southern tributary of the Copper River. The valley of this river has never been explored."

Mr. Bryant is accompanied by Mr. S. J. Entrikin, who served under Mr. Peary (1893-94); by Mr. E. B. Latham, a Coast Survey officer detailed from Washington; by the guide of the Russell party of 1893, and several camp hands. The government has loaned the necessary instruments and pays the salary of Mr. Latham, and the other expenses are borne by Mr. Bryant. He is expected to attack St. Elias on the side of the Malaspina Glacier, south side of the mountain, towards which the most accessible face appears to be turned.

About the time that Mr. Bryant started north from Tacoma, Prince Luigi of Savoy, nephew of King Humbert, arrived in New York, with a number of experienced Alpine guides and Signor Vittorio Sella, the most eminent of mountain photographers. They lost no time in crossing the continent and taking a steamer for Sitka, where a sailing vessel was in waiting to carry the party to Mount St. Elias. The expedition was joined in America by Professor I. C. Russell of Michigan University, Professor C. E. Fay of Tufts College, and two or three other Americans. The party has an adequate supply of instruments and photographic apparatus. A good series of photographs by Signor Sella will be a distinct addition to our facilities for studying this region.

MR. MORRIS K. JESUP'S EXPEDITION TO THE NORTH PACIFIC COAST.—Dr. Franz Boas and Mr. Harlan I. Smith, of the American

Museum of Natural History, and Dr. Livingston Farrand, of Columbia University, have left New York for the North Pacific coast to begin the programme of ethnological study described in the BULLETIN (p. 68, No. 1, 1897), and supported at the expense of President Jesup.

SOUTH AMERICA.

DECREASING RAINFALL ON TRINIDAD.—The last Annual Report of the Botanical Garden on Trinidad, Lesser Antilles, says that the mean annual rainfall has slowly but steadily decreased for the past three decades and that in the period, 1882-91, the precipitation was only 60.82 inches a year, which is as much rain as falls in any part of the United States except on the eastern Gulf of Mexico and Northern Pacific coasts. The residents of Trinidad are alarmed at the decrease, and the report says that at the present rate of the diminution of rainfall it is easy to estimate how much time will elapse before the island will become a desert. The cause of the diminished rainfall is attributed to the destruction of forests.

THE MAP OF PERU.—In his last annual address before the Geographical Society of Lima, the president, Dr. Luis Carranza, said that in spite of the financial disturbances in that country, funds had been found for the completion of the great map of Peru, the material for which is the result of the long labors of Señor Antonio Raimondi. Sixteen sheets had been published when the work was brought to a pause by the political difficulties of the country, and the consequent impossibility of obtaining money to pursue it. Since the resumption of the work, seven sheets have been completed, five have been sent to Erhard of Paris to be lithographed, the drawing of two others has been completed, and the drawing of Nos. 30, 31, and 32 is under way. The able cartographer Baluarte has charge of the production of these sheets, and No. 32 will complete this very important addition to the maps of South America. (*Boletín* of the Geographical Society of Lima, 3d Trim. Vol. VI.)

THE ASCENT OF MOUNT ACONCAGUA.—Dr. FitzGerald, fresh from his explorations in the New Zealand Alps, set out from England in October last, under the auspices of the Royal Geographical Society, with several scientific assistants and Alpine guides, including Zurbriggen, for South America, to undertake the ascent of Mount Aconcagua and the scientific exploration of that district in the Cordilleras. On Dec. 23, with four men and ten pack mules, he reached the Aconcagua slope and began the ascent. In three days he

attained the height of 19,000 feet amid many difficulties, that were intensified by extreme cold and a snow storm. Zurbriggen pushed on and at a height of 21,000 feet found a tin box containing a map, dated March, 1883, which Dr. Güssfeldt had lost during his ascent. The party was compelled to descend on Dec. 27, as the cold continued and it was not possible to prepare warm food. The second attempt on the mountain began on Dec. 30, but the summit was not reached. Owing to the very low temperatures the party retreated after attaining a height of 22,500 feet. The cold was still intense when the third ascent began, on Jan. 9, but four days later camp was pitched at a height of 20,000 feet and, on the following day, the explorers reached the arête between the peaks of Aconcagua at a height of 23,000 feet. Mr. FitzGerald, on account of illness, was unable to proceed beyond this point, but Zurbriggen pressed on, and at 5 P.M. reached the summit at a height of over 24,000 feet, the highest elevation yet attained by any mountain climber. Mr. Vines, the geologist, also reached the summit on Feb. 13, after a journey of nine hours. He says the slope of Aconcagua is porphyritic and has a thick covering of argillaceous earth which cannot sustain vegetation. The south side is broken up into peaks.

DR. HERMANN MEYER'S XINGU EXPEDITION.—In May, last year, Dr. H. Meyer started from Cuyabá, the capital of Matto Grosso, Brazil, to visit the Indian tribes in the upper part of the Xingu Basin. After a long march northward over the Chapada plateau the Paranatinga River, which flows into the Tapajos, affluent of the Amazon, was reached and ascended by boat to the Bakaïri River whence a three weeks' land march led to the Jatoba. On July 28 the expedition, fifteen men strong, started down the river in seven bark canoes, passing on the way three large water-falls and more than 100 rapids, among which some boats were wrecked and the supplies they contained were lost. On Aug. 16, the explorer entered the Ronuro, which he proved to be the chief source of the Xingu, and a week later, met the first Indians, the Kamagura, who were fishing at the confluence of the Ronuro and Kuluene. They gave the visitors a friendly reception. A journey up the Kuluene to the town of the Trumai tribe was made, and then Dr. Meyer began his chief work, the study of the numerous Nabuqua Indians living between the Kuluene and the Kulisehu. This work was accomplished in a satisfactory manner, and then the party descended the Kuluene to its confluence with the Kulisehu, which was ascended on the way back to Cuyabá, that town being reached on Dec. 2.

The only very serious mishap was the accidental discharge of a gun, on Oct. 1, by which Dr. Ranke lost his left eye. The results are large ethnological collections, vocabularies and photographs from the tribes visited, careful geographical route surveys and much minute information relating to the unknown tribes of the upper Xingu territory. (*Geogr. Zeitsch.* No. 4, 1897.)

Dr. von den Steinen, who explored the Xingu in 1884 and 1887, did not clearly solve the problem of its sources. He discovered the Batovy affluent of the Ronuro and the Kulisehu tributary of the Kuluene. The relative importance of the Ronuro and the Kuluene remained to be determined, and Dr. Meyer has ascertained that the Ronuro is undoubtedly the true source of the Xingu and that the Kuluene is a much less important stream.

EXPEDITION TO THE GALÁPAGOS ISLANDS.—The biological expedition to the Galápagos Islands, headed by Mr. C. M. Harris, of Augusta, Me., sailed from San Francisco on June 21, to be gone seven months. Associated with Mr. Harris are Professors Hall of Dartmouth College, Drowle of Brown University and Beck, the ornithologist, of California. The purpose is to collect and study all the forms of plant and animal life. These islands, which lie under the equator west of Quito, are poor in fauna and flora, but both are very interesting on account of their relations with those of the continent, and their dissimilarity to those of other Pacific islands, which has led to the theory that the islands may once have been united with the mainland.

EUROPE.

A NEW TOWN NEAR THE ARCTIC OCEAN.—The Russian Government is carrying out its scheme, approved some time ago, to build a new town on the Murman (Russian Lapland) coast of the Arctic Ocean near Yekaterinen-Haven. Mr. Blom Olsen, a civil engineer, whose specialty is harbor improvements, is in charge of the work. In August, last year, he had twenty men on the site of the proposed town making piers for the shipping and doing other pioneer work. Fifty wooden buildings were constructed at Archangelsk, last winter, and are to be removed to the new town this summer. It is the intention to abandon the town of Kola at the head of Kola Bay, and transfer the residents to the new town, which has been named Yekaterinograd. It is nearer the sea than Kola, and is, therefore, better situated for the convenience of the 1,500 fishermen who are engaged on that coast every summer.

THE HIGHEST ALPINE VILLAGES.—The loftiest village in Switzerland is Inf in the valley of the Avers, 6,996 feet above sea-level. In Italian territory, south of Monte Rosa, Rery is 7,055 feet above the sea and its inhabitants live at that elevation the year round. The village of Trepale (Italian) in the Val Livigno is 6,771 feet above sea-level. Avérol (elevation 6,661 feet) and Saint-Véran (elevation 6,628 feet) are both in the French Savoy. (*Deutsche Rundschau für Geog. und Statistik*, No. 5, Vol. xix.) All of these villages are higher above the sea than the summit of Mount Washington.

EXPLORATIONS IN ICELAND.—Four explorers were engaged in various researches in Iceland last year. Mr. Thoroddsen, the most assiduous explorer of Iceland, continued the work to which all his leisure time, for twelve years, has been devoted. Last summer he was engaged on the peninsula of the north coast between the Oeford and the Hunafloi, and thence worked southward with much difficulty across the highland to the glacier-covered Hofsjökull, in the centre of the island, where he discovered some lakes not hitherto known, two large lava streams and the sources of the Thorsa, the largest river of the island. This year he will make a journey across the island to complete the collection of material for his geological map, and he intends to write a work on the results of his studies of volcanic phenomena in Iceland. Lieutenant Garde, of the Danish navy, made a survey of Hvammsfiord, a branch of the large Breidfiord, on the west coast, where it is proposed to establish a harbor. Lieut. Brunn made a careful examination of the remains of the first Scandinavian settlements in Iceland and established their similarity to the Norse remains in Greenland. The Danish Deep Sea Expedition under Captain Wandel added new facts to our knowledge of the coast and coast waters of the island, already referred to in the BULLETIN (p. 80, No. 1, 1897).

COMMERCE IN THE KAISER WILHELM CANAL.—During the first year after the opening of this canal, connecting the waters of the North and the Baltic seas, 7,531 steamers engaged in commerce and 9,303 sailing vessels passed through it; also 266 German and 2 foreign warships. The German vessels numbered 6,480 steamers and 8,477 sailing craft. The receipts from tolls were: steamships, \$136,165; sailing vessels, \$43,125; total, \$179,290.

THE XII GEOGRAPHENTAG, JENA.—The Deutsche Geographentag, or Congress of German Geographers, was first held in 1881, at

Berlin. It met annually until 1887, and since then the meetings have taken place once in two years. The objects are, in the main, educational and social, and these German meetings are distinguished from the annual gatherings in Section E of the British Association and from the annual reunion of geographical societies in France by the preponderance of the University and educational element. The attendance at Jena this year (April 20-23) was above the average, there being nearly 600 members and associates present. Foreign geographers are naturally attracted by these scientific gatherings, and eleven nationalities besides German were represented at the Jena Congress. It is learned from F. P. Gulliver's article on the Congress (*Science*, June 4), that Dr. G. Neumayer, of Hamburg, who presided, did not indicate in his address that the Commission on South Polar Exploration, appointed at the Bremen meeting in 1895, had reached practical results in the effort to place a German expedition in the Antarctic area, but the way is being prepared for work in that poorly mapped region. Kerguelen Island is the proposed base for a German expedition, and the money required for two seasons' work is about \$200,000.

Three papers on new explorations illustrated the fact that the long journeys of the earlier explorers are being superseded by more thorough methods of research, the modern traveller studying in more detail a small area or taking up a special problem in a larger district. This was particularly the case with the paper of Dr. Hermann Meyer, of Leipzig, describing his careful ethnological studies in the Xingu Basin, central Brazil. The other papers on exploration were "German Investigations in Asia Minor" by Dr. Heinrich Zimmerer of Munich; and a "Journey through Syria and Anatolia in 1895" by Roman Oberhummer.

Notwithstanding the fact that Germany leads in geographical education, Prof. Fischer of Berlin convinced his audience that there was reason for immediate efforts to improve geography teaching in Prussia. Prof. Dr. W. Sievers outlined excursions with students to teach them geography by a closer examination of typical forms. He suggested for the Universities of middle Germany three trips in successive years, first to the sea-coast, second to the highland, and third to the Alps. Prof. Dr. J. Palacky, of Prague, said herbariums should be arranged according to the geographic distribution of plants, for teaching geographic botany.

Among other features was a discussion of earthquake problems led by Prof. Gerland of Strassburg and Dr. Supan of Gotha. Dr. Supan outlined a plan for the more systematic observation and

recording of earthquakes. Several interesting papers were read on biologic geography, and Dr. E. Hahn of Lübeck showed the marked geographic control exhibited in the distribution of the various beasts of burden throughout the world. A description of the present forms of the elevated mass of the Thüringerwald, by Prof. Dr. J. Walther, was the only physiographic paper read, and mathematical geography was also represented by one paper: "The shadow cast by mountains and its effect in the Alps and in the Mountains of Central Europe," by Dr. K. Peucker of Vienna. The next place of meeting will be Breslau.

THE SEVENTH INTERNATIONAL GEOLOGICAL CONGRESS. — This Congress will be held at St. Petersburg from Aug. 28 to Sept. 4, and will be attended by a number of American geologists. The topics before the Congress will include the reports of committees on the unification of geological nomenclature, the production of a geological map of Europe, glacial phenomena, petrography and bibliography. The committee on bibliography, with the French geologist M. Emm. de Margerie as secretary, has already issued a valuable volume. The Russians have arranged for the entertainment of their guests on an unprecedented scale. A number of geological excursions have been outlined for the days preceding and succeeding the session of the Congress, two of which are 2,300 and 2,700 miles in length, the one extending to the Ural Mountains and the other to the Caspian and the Black seas. These facilities, the Committee distinctly announces, are not extended to persons who have not made themselves known by geological publications.

GEOGRAPHICAL INSTRUCTION IN THE GERMAN-SPEAKING COUNTRIES. — The pre-eminence in geographical education of those parts of Europe where the German language is the mother tongue is well illustrated by the summary in *Petermanns Mitteilungen* (No. IV, 1897), showing the topics, geographical or related to geography, such as geology, climatology, etc., treated in the universities and upper schools during the summer term, this year. The professors and instructors in geography gave lecture courses in seventeen of the universities of Germany and the technical schools of Darmstadt, Dresden, Munich and Münster; in five universities of Austria and the technological school of Vienna; and in three universities of Switzerland and the technical school at Zürich. The programme at the University of Berlin was no larger nor more varied than that

in a number of other institutions, and it is appended here as a specimen of the work of one semester:

Prof. von Richthofen—(1) Geography of the Russian Empire in Europe and Asia. (2) Geographical Discussions.

Prof. Dr. Dove—(1) Geography of Africa. (2) Colonial Industrial Enterprise, particularly in relation to the German Protectorates.

Prof. Dr. K. Kretschmer—The Historical Geography of Germany.

Prof. Helmert—(1) Theory of Map Projections. (2) Determination of Heights.

Prof. Dames—Geology of the North German Plain.

Prof. Dr. Jaeckel—Geology of Germany.

Prof. Dr. von Bezold—Theoretical Meteorology (Statics and Dynamics of the Atmosphere).

Prof. Dr. Assmann—Outlines of Meteorology and Climatology.

Prof. Dr. von Luschan—(1) Physical Anthropology. (2) Ethnology and Anthropology of the Pacific Islanders with special reference to the German Protectorates. (3) Exercises in Anthropology and Ethnology.

Prof. Böckh—Theory of Statistics.

Prof. Meitzen—Statistics of the German Empire.

AFRICA.

PROBLEM OF THE OMO RIVER.—Count Eduard Wickenburg of Austria sailed for Aden on March 20 to engage in explorations for two years in north-east Africa. He has an ample equipment and expects to organize a large expedition in Shoa and have the support and assistance of King Menelek. This is a sanguine view of his prospects, unless Menelek's coöperation has already been guaranteed. The Abyssinians and their king have recently demonstrated their hostility to exploratory enterprises in their territory proper and the parts of Galla Land they have conquered. They turned back Dr. Donaldson Smith (1894), who was compelled to seek a route south of King Menelek's sphere of influence; and meagre reports of the massacre of the second Böttégo expedition, either by one of Menelek's chiefs, or by Galla natives under his control, are at hand. Count Wickenburg hopes to solve the problem of the Omo River, whose destination is still unknown, though its course has been traced for 150 miles in its upper part. It has long been supposed to be identical with the Nianam emptying into Lake Rudolf, but Dr. Donaldson Smith ascended that river for 100 miles and believes it has no connection with the Omo. The Austrian explorer's plans also embrace a traverse of the unknown region between Lake Rudolf and Victoria Nyanza.

HEALTH CONDITIONS IN NYASSA LAND.—Although this region is regarded as one of the most healthful of inner tropical Africa, the mortality among the white residents for the year beginning March, 1895, was unusually large, owing to an epidemic form of malaria. Twenty-eight persons died among 275 white residents. Still the Protectorate is making rapid progress. The exports, consisting

chiefly of ivory and coffee, increased from \$48,520 in the previous year to \$98,345.

FIXING THE SAHARAN SAND DUNES.—Efforts to restrain the drifting sands of the Algerian Sahara are making on a somewhat larger scale and with continued success. According to ancient Greek and Roman writers and Arabian geographers, many oases in the Sahara were formerly five times as large as they are to-day. Gradually they have been encroached upon by wandering sand dunes which have destroyed the fertility of large parts of them. The French military authorities have given much study in Aïn-Sefra, Wargla and El Golea, for several years to methods of curbing this destructive tendency. They find that some forms of vegetable life can be made to grow in the desert wastes and have the effect, in large measure, to fix the sand dunes in position. Nurseries for raising the desired plants are maintained in Aïn-Sefra and El Golea. The ground where the plants are set out is first covered with a litter of alfa grass, which prevents the sand from overwhelming the small growths before they have been able to establish themselves. Among the plants experimented with have been the peach tree, aspen, Italian poplar, weeping willow, grape vine, cane brake and Spanish broom. The poplar appears to be particularly adapted to fix the sand in place and every year is adding a considerable area to the regions thus treated.

GOLD IN AFRICA.—The output of the mines in the Witwatersrand gold field, for 1896, was 2,281,874 ounces, which was 4,239 ounces more than in 1895.

Alluvial gold has been found in many places in Ashanti. Europeans come across many deserted holes which the natives have worked for gold to the convenient depth of three feet or so. In the hills and higher lands there is quartz which has been pronounced promising. The climate is a serious obstacle to opening mines by foreigners. Gold dust may be bought at £2 an ounce at Bona, in the interior, and sells at £3, 12s., 6d., on the coast. (Major C. Barter in the *Scot. Geog. Mag.*, Sept., 1896.)

PROGRESS OF THE CONGO RAILROAD.—On April 19 the railroad bridge over the Inkissi affluent of the lower Congo was completed. The last large stream on the way to Stanley Pool has been bridged and trains are running to the Inkissi, 171 miles from the starting point at Matadi. Just twenty years, lacking four days, before the completion of this bridge, Mr. Stanley discovered the Inkissi dur-

ing his boat journey down the Congo. It was in this region of cataracts that he found his greatest impediments and he was five months, from March 16 to Aug. 9, 1877, crossing the difficult region between Stanley Pool and Boma, fifty miles from the sea. More than half of this distance is now covered in twelve hours' travel on the railroad, and next year, when the railroad will be completed to Stanley Pool, the entire distance may be traversed in a day. There are now forty-five steamboats and a large fleet of tow-boats afloat on the 7,000 miles of navigable waters of the Upper Congo. (*Le Mouvement Géographique*, No. 20, 1897.)

THE GOBI NOT A DESERT.—Mr. W. Obrutscheff, in his book "Aus China," treats at length of the physical features of the Gobi, and brings much evidence to show that this vast region is not a desert, like the African and Arabian wastes to which it has often been compared, but is a plateau with all the characteristics of a steppe. Once a part of the sea-floor, its many hills and valleys are the result of long erosion since its elevation. Atmospheric precipitation fails in no part of the Gobi, and though the quantity of rain or snow is not large, it suffices, in most years, to produce a good growth of grass. The caravan route to Urga is traversed every year by 100,000 camels with their loads of tea, and the wells in this most barren part of Mongolia are usually not more than twenty to thirty miles apart. The wandering Mongolians have large herds, and only in the driest years have they any difficulty in finding sufficient quantities of fodder. The author says that only in certain areas does the Gobi approach the character of a desert, and even these regions do not compare in barrenness and lack of water with the deserts of Africa, Arabia, the Tarim Basin and the Ala-Schan. (*Deutsche Rundschau für Geog. und Stat.*, No. 8, Vol. xix.)

THE DEPRESSION BELOW SEA-LEVEL NEAR LUKTSCHAN.—The barometrical observations by Mr. Roborovski in the neighborhood of Luktschan (in east Turkestan, south-east of Turfan) fully confirm the report by the Grum-Grijmailo brothers in the first volume of their "Reise im westlichen China," of the depression below sea-level at this place. From their barometrical observations Gen. Tillo computed that the depression was 184 feet below sea-level. (*Geographische Zeitschrift*, No. 3, 1897.)

THE WALLACE LINE.—Mr. Martens has added further proof that the Wallace Line, between the islands of Bali and Lombok, does not mark a sharp division between Asian and Australian types of animal

life. Of ten varieties of mollusks collected on the Island of Lombok, three are geographically neutral, four are among the fauna of the Sunda group, while three belong to the eastern side of the line. Thus the transition has no sharp boundary, but is very gradual. (*Geog. Zeitsch.*, No. 3, 1897.)

THE POLAR REGIONS.

MR. R. E. PEARY'S FUTURE ARCTIC WORK.—It was announced on May 25 that the Navy Department had given leave of absence for five years to R. E. Peary, C. E., U. S. N., to carry out the plans for north polar research which he outlined in his address before the American Geographical Society on January 12 (*Bull. Amer. Geog. Soc.*, pp. 117-120, No. 1, 1897). The necessary funds have been secured to enable Mr. Peary to devote the time necessary, within the above limit, to the delimitation of the archipelago north of Greenland and the elimination from the maps of the blank space between the eighty-fourth parallel and the pole. Mr. Peary will start for north-west Greenland early in July to obtain the large meteorite on the coast of Melville Bay, and he will then engage the Eskimos whom he will take north with him in the summer of 1898, when his main work will begin. They will thus have a year in which to provide a stock of furs and other Arctic supplies for the more northern work. Mr. Peary will be accompanied north this summer by a party under the direction of Mr. Russell W. Porter, who will make explorations in Baffin Land. A party from Colby University (Waterville, Me.) will also go north with the explorer.

THE FORMER ESKIMO OF SCORESBY SOUND.—The exhaustive report on the work of the Danish expedition to East Greenland (1891-92), led by Lieutenant C. Ryder, fills Vols. xvii, xviii and xix of the *Meddelelser om Grønland*, published at Copenhagen, last year. The results are summarized in *Petermanns Mittheilungen* (pp. 86-95, No. 4, 1897), with a geological map of Scoresby Sound on a scale of 1:1,500,000. The chief purpose of the expedition was to survey the unknown coast between Scoresby Sound and Angmagssalik, to the south, where Holm found, in 1884, in about 65° 40' N. Lat., the most northern Eskimo settlements on the east coast. Ryder was not able to map this unsurveyed coast line, but his very complete scientific studies in the Scoresby Sound region, his headquarters for nearly a year, entitle his researches to a place among the important Greenland explorations. Scoresby Sound is over 300 miles north of the nearest east coast settlements, but the Eskimos formerly lived

much further north on that coast, and Ryder made a careful study of the ample evidences of their former residence in Scoresby Sound. He found many house ruins, graves, kitchen-middens, etc., particularly on Cape Stewart, South Cape in Northwest Fiord, Reindeer Cape in West Fiord, and Denmark Island. He found the ruins of fifty winter houses in seven different locations, numerous tent rings, formed by large stones laid in a circle, marking the places of the summer tents, and the remains of dog sledges, bows and arrows, fox traps, harpoons and other food-catching implements. These natives lived essentially in the same way as those of Angmagssalik and the west coast at the present day, except that their small houses were intended for only one family, while the winter dwellings south of their former abode are built for several families. They were not so advanced as the Angmagssalik natives are in the art of making and adorning their various manufactures. Ryder believes that they did not die out, but removed further south, and were the ancestors of the existing east coast natives. This view is supported by the fact that nearly all the objects found had evidently been worn out or broken and thrown away as useless. He believes the period when Scoresby Sound was inhabited may date several centuries back, and his observations tend to strengthen the theory that these natives were probably derived directly from North American Eskimos who crossed the archipelago and North Greenland to reach the east coast. The fashioning of their implements seems identical with that of the Point Barrow Eskimos, and they appear to have been more closely connected with the north-western branch of the family than with the central Eskimos of West Greenland.

MR. S. A. ANDRÉE'S BALLOON VOYAGE.—Mr. Andrée and his party sailed from Gothenburg (Göteborg), Sweden, on the Swedish gunboat *Svenskund*, on May 18, for Danes Island, Northwest Spitzbergen, about 700 miles from the North Pole, to make the second attempt to cross the unknown polar area by balloon. The balloon and most of the equipment was forwarded by the steamer *Virgo*. Mr. Andrée hoped to complete the inflation of his airship, in the balloon shed he built last year, by June 20, and if necessary, he will wait till early in August for the essential southern wind, whose failure to come defeated his plans last year. His balloon was somewhat enlarged in Paris last winter, its present capacity being 170,000 cubic feet, more space for gas being desirable, as the three thicknesses of silk, of which the balloon is made, proved heavier than the estimate. As the *Jeannette* and *Fram* expeditions covered so much of the Asian Arctic area, Mr. Andrée prefers, if

possible, to cross the unknown area and emerge on the American side. He believes that with his adjustable sail and guide ropes dragging on the ice he can, if he desires, divert the balloon, on an average, 27° from the direction of the wind, and thus have his airship, to an important degree, under his control. His companions are Mr. Nils Strindberg, who was with him last year, and Mr. Knut Fraenkel, a civil engineer. Mr. G. W. E. Svedenborg, an artillery officer in the Swedish army, will be one of the voyagers in case either of Mr. Andr  e's comrades is prevented from making the ascent.

ANTARCTIC EXPLORATION.—Lieutenant de Gerlache will sail from Antwerp about July 15 for Antarctic waters on his steamer *Belgica* (*Bulletin*, p. 403, No. 4, 1896). He is equipped for three years' absence, but the results of his work are likely to be much curtailed by the fact that he intends to return to Melbourne for the winter seasons instead of wintering in high southern latitudes, ready to seize the first opportunity in the spring to advance his work. He plans in the approaching summer of 1897-98 to advance south of Graham Land on the American side of the Antarctic area, and in the following season, starting from Melbourne, he will endeavor to reach Victoria Land. This expedition has purely scientific objects and an adequate staff.

At the annual meeting of the Royal Geographical Society on May 17 last, the president, Sir Clements Markham, said that the Admiralty had informed the Society that a scientific expedition to the Antarctic Ocean under naval auspices could not be despatched. The president added that this service must now be undertaken by the Society or be left undone. The Society had decided to organize an expedition, and an appeal for funds would be made to equip the party on an adequate but not an extravagant scale.

The highest point attained in south polar waters (Ross, 1842) is about 817 statute miles from the South Pole. About the same distance from the North Pole a small house has been erected, on the west coast of Spitzbergen, and an excursion steamer, this summer, is carrying tourists to this point. Dr. Supan refers to the fact (*Petermanns Mitteilungen*, No. 1, 1897), that the wholly unknown Arctic area is now not larger than European Russia, while the wholly unknown Antarctic regions are twice as large as Europe; and that the geographical knowledge of Antarctica now occupies just about the same position as the world's knowledge of the Arctic regions at the end of the sixteenth century.

GENERAL.

The sale of the topographic sheets as well as the geologic maps and atlases of the United States Geological Survey to the public has recently been authorized. They are now sold at five cents apiece for small orders, and at two cents apiece for orders of 100 sheets or more. At these low prices they are brought within easy reach of teachers and others who desire to study them.

The Patron's Medal of the Royal Geographical Society has been awarded to Dr. George M. Dawson, Director of the Geological Survey of Canada, for his geographical explorations in the Northwest Territories and other parts of Canada and for the encouragement he has given to geographical work on the part of the Survey officers.

Cornell University has undertaken, through its Agricultural College, to assist teachers and parents interested in nature study, by distributing, free of charge, leaflets giving instructions how to make accurate observations of common objects.

J. Scott Keltie, LL.D., will be president of Section E (Geography) of the British Association for the Advancement of Science, which will meet in Toronto in August. Among the other officers of the section will be H. R. Mill, D. Sc., Major L. Darwin and Mr. E. G. Ravenstein, all of whom are expected to attend the meeting. These gentlemen are conspicuously identified with the Royal Geographical Society.

The bodies of the two missing explorers, C. F. Wells, second in command of the Calvert expedition in West Australia, and Mr. G. L. Jones, the geologist of the party (*Bull. Geog. Soc.*, p. 78, No. 1, 1897), have been found in the great waste which the party were exploring. They had not been killed by the natives, as was surmised, but died of their privations.

OMITLÁN, A PREHISTORIC CITY IN MEXICO.

BY

WILLIAM NIVEN.

The ruined city of Omitlán is in the State of Guerrero, which lies between $16^{\circ} 10'$ and $18^{\circ} 47'$ N. Lat., and $97^{\circ} 55'$ and $102^{\circ} 15'$ W. Long. (Greenwich). The southern boundary of the State is the Pacific Ocean, and its principal port is Acapulco.

The ruins are on the eastern outskirts of a region which covers about 6,000 square miles, to the northwest of the capital, Chilpancingo. This city I visited five years ago while travelling in Guerrero in quest of minerals, and saw at the Governor's palace a collection of antiquities, including idols of stone, domestic utensils, war implements, articles of personal adornment of jade, jasper, diorite, onyx, obsidian, and even rock crystal. These objects, I was told, came from the neighborhood of the Indian village of Xochipala. I visited the place, and the chief of the pueblo showed me many articles like those in the Governor's palace.

When I returned to New York I saw the president of the American Museum of Natural History, Mr. Morris K. Jesup, and described to him the interesting antiquities I had seen at Chilpancingo and Xochipala. He immediately agreed to defray the expenses of a forty days' trip through the country. I visited Xochipala again, accepted the Indian chief's offer to furnish me with a guide, and brought back with me more than four hundred archæological objects, which are now on exhibition at the American Museum of Natural History, and comprise the Jesup Collection of Mexican Antiquities.

I had seen enough to satisfy me that I had made a discovery of great archæological importance and I began negotiations with the Mexican Government for the right to explore the State of Guerrero for antiquities. These negotiations were prolonged and were still going on when I left New York in July, 1896, for a more extended survey of the ruins. I was kindly received by the Chief of Xochipala and furnished with guides and workmen. The first indications of the ruins were observed about half a day's journey west of the village. We came upon foundations of buildings, then upon walls three or four feet high of structures, which measured from 40 to 100 feet square, and pitched our tent on the

top of a hill in a temple with clearly defined walls 300 by 200 feet. In the centre was an altar of solid masonry 15 feet square at the base, in good preservation, and nearly 20 feet high. At each corner the foundations and part of the walls of circular towers 6 feet thick were plainly visible. Photographs were obtained at various points, but owing to the trees and thick tropical underbrush it was difficult to show the altar and temple as they really appeared. Resuming our search, we travelled over ruins every few hundred feet for six miles. On the following night we camped at another temple and took several interesting photographs. A trench was dug, and in one of the altars we found a plaster wall, and on the plaster floor an abundance of beads and broken pottery and two diorite celts or chisels. After travelling six hours west over ruins at nearly every step, and crossing the great barranca of Xilitlahco, we finally reached the western boundary of the ruined city.

The first excavation was made of ruins of a building erected with unusual skill, the stone having been cut in equal dimensions, about 18 x 12 x 10 inches. We found ourselves in a circular chamber filled with dust and fragments of timber, which crumbled at the touch, and with broken plaster painted a brilliant red and white. The pigment must have been of excellent quality. Mixed with this debris were large boulders and gravel. In the centre we were surprised to find human bones, and a perfect skeleton of what has been pronounced by Dr. Wortman, of the American Museum of Natural History, to be a Mexican dog. A prehistoric Mexican dog is a novelty. Professor F. W. Putnam, of Harvard, is making a special study of the subject, and would like to have the whole skeleton which was found. The chamber was cleaned out, and on the floor were found large quantities of stone beads, idols, masks and heads of diorite.

Travelling a mile south, we entered a mound from the east and west side, following a plaster floor, from which we picked up a number of beads of green jade and serpentine. A peculiarity of this jade has been noted, that no material of the same kind is found in Mexico. The jade of Australia and South America does not resemble the jade found in these Mexican ruins. Jade found in China does resemble it somewhat, and the question is asked whether there ever was any connection between China and the ruined city.

After a day's ride almost due south, we found on the side of a steep hill a large cut stone, 7 feet x 2 feet, on which is carved the figure of an Indian, and near the summit two idols, one of which measured five feet in height. About ten miles east, at a place

called Chalchiutepetl, "The Hill of the Precious Stones," we found the greatest number of green diorite and jade beads, also shell ornaments, a copper bell, dress ornaments, a seal of terra cotta, and a peculiar object resembling an Egyptian tear-bottle. Here we discovered two pyramids, one of them more than 60 feet high. The hill appeared to have been smoothed down and then faced with small cut stones about 8 x 6 x 4 inches.

Some of the most interesting idols were found here; one with curious marking on the breast—a design of fire, and on the face a striking expression of pain. They are all made of hard stone, diorite and jade. A tablet with hieroglyphics was found near this place, 3 feet $1\frac{1}{2}$ x 1 foot, and although much obliterated is an indication of what this interesting locality is likely to yield.

About ten miles south we found a quantity of bone and shell beads, and within a space of twelve inches two dozen finely formed lance heads and two small masks. Close to these was a layer of human bones four to six inches thick and twenty feet in length. The skulls appeared perfect, but fell to pieces at the slightest pressure. The canine teeth seemed to have been ground flat. This deposit of bones could be plainly seen from the cañon twenty-five feet below.

Going north, we found most of the buildings buried. In one passageway on the divide there were two chambers filled with ashes, stones and pottery, and two green stone masks, and a mile south of this we came to a wall fourteen feet in height and two and a half feet thick. The material was limestone, and the mortar in some places was as hard as the stone.

A day's journey north brought us to the remains of an arch 30 feet high, and the foundation of an edifice covering several acres. In a mound not far off we uncovered the front wall of a building. Near the top were twelve stones shaped like sugar loaves, and laid side by side with the broad end projecting. We dug up heads of trachyte and jade, and many circular stones like grindstones.

Eight miles to the westward was found a temple with the extraordinary dimensions of 600 by 200 feet. After four days spent in digging at this place, we came upon a large olla, or jar, filled with mother-of-pearl objects. Many of these were in the form of fishes, and four were kingly heads, with a head-dress. All were perforated.

My survey extended over a space of several hundred square miles. The country was a succession of ridges and ravines, and every ridge was covered with ruined structures. Until additional excavations have been made, it would be idle to speculate regarding

the inhabitants of the ruined city. But extensive research by an expedition which I expect to organize may settle many questions as to their identity.

Early in May last I received from Mexico the following translation of the most liberal concession granted by the Mexican Government for the prosecution of explorations in certain districts of the State of Guerrero; and this task is now before me.

WILLIAM NIVEN.

NEW YORK, JUNE 21, 1897.

TRANSLATION.*

Permission granted by the Citizen Secretary of State, Justice and Public Instruction in representation of the Federal Executive Government and in accordance with the faculties conceded to the same by the law of June 3, 1896, to Mr. William Niven for the exploration, extraction and copying of archaeological monuments in the Mexican Republic under the following conditions:

1. Mr. William Niven, or the parties representing his rights, when they prove their representation in accordance with the formalities prescribed by the Civil Code of the Federal District of Mexico, is permitted to make in the Districts of Aldama, Hidalgo, Bravos, Guerrero and Alvarez of the State of Guerrero, whatever excavations he may think suitable in order to discover monuments and objects of archaeological value or historic interest.

2. The work shall be done in the places which the concessionaire designates, after previous notice has been given to the Department of Justice in each case of exploration and in the understanding that when the place designated be private property no exploration whatever is permitted until the consent of the owner be obtained, said consent to be presented to the Inspector of Archaeological Monuments.

3. The Inspector mentioned in the foregoing clause shall accompany Mr. Niven in his operations and his travelling expenses and alimentation shall be paid by said Mr. Niven, whom the Inspector shall help in his work as far as this help be not contrary to his functions as Inspector.

4. The Inspector shall keep in duplicate a diary of the work done and an inventory of all the objects which are discovered and of the moulds and photographs that have been taken, and shall send monthly a copy of this diary and of the inventory to the Department of Justice.

5. Mr. Niven binds himself to be responsible that the historical objects which are discovered shall not be damaged. The Inspector shall in this respect exercise special vigilance. He shall advise the Department when such damage is done, and by the simple fact that the damage has been done intentionally the present permission will become void.

6. The monuments of easy transportation shall be taken to the Capital of the State or Territory in which the discovery has been made, so that thereupon the Department of Justice can determine their final destination.

7. The objects which according to the judgment of the Inspector are not easily transported on account of their large dimensions or excessive weight, shall remain in the place where they are found and the Department of Justice shall dispose as regards them.

* The original Spanish text is appended as a foot-note.

8. If from the excavations result the discovery of ruins of ancient settlements nothing shall be taken from them until the special case be decided by the Department of Justice.

9. All the work needed for the explorations described in this present permission, and also all the expenses of transportation of the objects found to the settlement nearest to the place where they were discovered, shall be for account of Mr. Niven or his legitimate representative.

10. All the material found in the explorations which have been mentioned shall be the property of the Mexican Government. Mr. Niven or his legitimate representative are permitted to take moulds and photographs, but are obliged to give to the Inspector one copy of each mould and photograph taken.

11. In case two or more similar pieces are found, the Inspector shall give the concessionaire one of said pieces, immediately notifying the Department of Justice.

12. The Department of Justice shall communicate this permission to the Governors of the States and Jefes Politicos of the Federal Territories, when Mr. Niven considers this expedient, in order to stimulate these functionaries within the sphere of their attributions to help the concessionaire in his operation.

13. The material, original specimens, moulds and photographs, which in accordance with this concession are to be exported, shall be exempt from all export duties, but shall always be subject to the inspection of the delegates of the Mexican Government.

14. Failure on the concessionaire's part to comply with any of the obligations imposed by the foregoing clauses shall be cause that this concession be declared void by the Administration.

15. This permission will last 5 years counted from the date of its publication in the official Daily Paper, and gives the concessionaire exclusive right to make explorations in each of the places where he commences to explore, as long as he keeps up the necessary work.

16. This permission shall become void for the following reasons as well as for those specified in the foregoing clauses :

I. If the work of exploration be not commenced within a year from the date on which this present permission is published in the official Daily Paper.

II. If the work of exploration is discontinued for more than two consecutive years.

MEXICO, APRIL 7, 1897.

(Signed)

J. BARANDA.

SECRETARIA DE ESTADO DEL DESPACHO
DE JUSTICIA é INSTRUCCIÓN PÚBLICA.

Permiso concedido por el C. Secretario de Estado y del Despacho de Justicia é Instrucción Pública en representación del Ejecutivo Federal, en uso de las facultades concedidas á este por la ley de 3 de Junio de 1896 al Sr. Don Guillermo Niven, para la exploración, extracción y copia de monumentos arqueológicos en la República Mexicana, bajo las condiciones siguientes :

1. Se permite al Sr. Guillermo Niven ó á las personas que representen sus derechos acreditando dicha representación, de acuerdo con las formalidades prescritas por el Código Civil del Distrito Federal Mexicano, que practique en los Distritos de Aldama, Hidalgo, Bravos, Guerrero y Alvarez del Estado de Guerrero, las excavaciones que creyere convenientes, con el fin de descubrir monumentos y objetos arqueológicos ó de interés histórico.

2. Las obras se llevarán á cabo en los lugares designados por el concesionario dando éste aviso previo á la Sria. de Justicia, de cada caso de exploración, bajo el concepto de que, si el lugar designado fuese de propiedad privada, no se permitirá ninguna clase de exploración sino despues de obtenido el consentimiento del propietario, haciendo constar dicho consentimiento ante el Inspector de Monumentos arqueológicos.

3. El Inspector de que habla la cláusula anterior acompañará en sus operaciones al Sr. Niven y

sus gastos, de viaje y de alimentación, serán costeados por el referido Sr. Niven, á quien el relacionado Inspector auxiliará en sus tareas en cuanto no fuere contrario á sus propias funciones de Inspector.

4. El Inspector llevará por duplicado un diario de los trabajos que se efectúen y un inventario de todos los objetos que se fueren descubriendo y de los vaciados y fotografías que se hicieren y enviará mensualmente un tanto de ese diario y de ese inventario al ministerio de Justicia.

5. Bajo su responsabilidad se obliga el Sr. Niven á no deteriorar en lo mas mínimo los objetos históricos que se descubrieren. El Inspector ejercerá á éste respecto especial vigilancia, dará aviso al Ministerio siempre que tal deterioro se efectuare, y si ese deterioro fuese intencional por ese solo hecho quedará nulificado el presente permiso.

6. Los monumentos de fácil trasporte serán conducidos á la Capital del Estado ó del Territorio en que se hubiere hecho el descubrimiento, para que en seguida la Secretaria de Justicia disponga de su final destino.

7. Los objetos que á juicio del Inspector no fuesen de fácil trasporte por sus grandes dimensiones ó por su peso excesivo, se dejarán en el lugar donde se encontraren para que de ellos disponga la Secretaria de Justicia.

8. Si de las exploraciones y excavaciones resultare el descubrimiento de ruinas de antiguas poblaciones, nada se tocará de ellas sino hasta que se decida el caso especial por la Secretaria de Justicia.

9. Todos los trabajos que requieran las exploraciones de que se dá cuenta en éste permiso, así como todos los gastos de conducción de los objetos encontrados hasta la población mas cercana á los lugares en que fueren descubiertos, serán por cuenta del Señor Niven ó de su legítimo representante.

10. Todos los materiales que en las exploraciones de que se ha hablado fueren encontrados, serán propiedad del Gobierno Mexicano, pero se permitirá al Sr. Niven ó á su representante legítimo que saque moldes y fotografías de los objetos descubiertos, y tendrá la obligación de entregar al Inspector un ejemplar de cada molde y de cada fotografía que se sacare.

11. En el caso en que se encontraren dos ó mas piezas iguales, el Inspector entregará al concesionario un ejemplar de dichas piezas, avisando desde luego á la Secretaria de Justicia.

12. El Ministerio de Justicia dará conocimiento de éste permiso á los Gobernadores de los Estados y Jefes políticos de los Territorios federales cuando lo considere conveniente el Sr. Niven, á efecto de excitar á los referidos funcionarios para que, en la esfera de sus atribuciones, auxilien las operaciones del concesionario.

13. Los materiales originales, moldes, y fotografías que con arreglo á ésta concesión se exportaren quedarán exentos de todo derecho de exportación pero siempre sometidos á la inspección de los Delegados del Gobierno Mexicano.

14. La falta de cumplimiento por parte del concesionario de alguna de las obligaciones que se le imponen en las anteriores cláusulas dará motivo para que administrativamente se declare la caducidad de ésta concesión.

15. Este permiso durará cinco años contados desde la fecha de su publicación en el Diario oficial y constituye á favor del concesionario el derecho exclusivo de hacer exploraciones en cada uno de los lugares en que las emprenda mientras esté practicando las obras necesarias.

16. Este permiso caducará por los motivos siguientes además de los especificados en las cláusulas anteriores :

I. Por no empezar los trabajos de exploración en el término de un año contado desde que se publique en el Diario oficial el presente permiso.

II. Por interrumpir los trabajos de exploración por un periodo de dos años consecutivos.

MEXICO, 7 de Abril de 1897.

J. BARANDA.

MAP NOTICES.

Since our last issue the U. S. Geological Survey has published ten sheets of the General Atlas of the United States. Among those are four from New York, all being in the Adirondack region. These are Bolton, which includes the northern part of Lake George, North Creek, Paradox Lake and Schroon Lake, the four sheets representing an area 30' square, between latitude 43.30 and 44.0, and longitude 73.30 and 74.0. These sheets are upon the scale 1:62,500.

In Nebraska is one sheet, Lincoln, representing the State capital and its surroundings, upon the scale 1:125,000.

In Colorado are three sheets, all on the scale 1:62,500, and representing areas in the San Juan mining region. They are Silverton and Telluride, in the north, and Laplata in the southwest.

In California are two sheets, on the scale 1:62,500. The Tamalpais sheet lies just north of the Golden Gate, and shows a portion of the Coast Ranges; and the Port Harford sheet, on the coast, is farther to the south.

A notable contribution to geography has been made in the publication of the atlas accompanying the report of the Venezuela Commission. Of the 76 maps contained therein 15, prepared on the same base, a map compiled from the best obtainable data, exhibit the historical and geographical data collected. The first of these assembles the various boundary lines proposed; the second, the wooded and treeless areas; a third, drainage areas; a fourth, geology; the fifth to the fifteenth, European occupation at different dates. The remaining 61 maps are fac-simile reproductions of old maps, 48 of which have been previously published, while the remaining 13 are from manuscripts. These are introduced to illustrate representations by Mr. Severo Mallet-Prevost, Secretary of the Commission, and by Prof. Geo. L. Burr. Among them are many of the greatest interest, particularly those obtained in manuscript at The Hague, by Professor Burr.

The atlas is published in sumptuous form, the engraving being by A. Hoen & Co., of Baltimore.

The report of the Red River Drainage Commission of Minnesota for the year 1886 contains a series of maps, on a scale of two miles to one inch, of the western portions of Marshall, Polk, Norman, Clay and Wilkins counties, comprising about 3,000 square miles of

the lower and more level portions of Red River Valley. They show the streams, section lines, railroads, and, most important of all, the elevation, to a tenth of a foot, of section and quarter section corners. From these data contours can be sketched with great accuracy.

From these maps one gains an idea of the extremely level surface of this valley, recently the bed of Lake Agassiz. From the south end of Wilkins County to the north boundary of Marshall, a distance of 170 miles, as the crow flies, the fall in Red River is but 170 feet, or, one foot per mile. In a direction at right angles to the river the slopes range from one to seven feet per mile. The lowest point in this area is 800 feet above sea, while the highest point does not reach 1,100 feet. There is probably no more level region of equal extent on earth than this valley of Red River.

H. G.

BOOK NOTICES.

Farthest North, Being the Record of a Voyage of Exploration of the Ship "Fram," 1893-96, and of a Fifteen Months' Sleigh Journey by Dr. Nansen and Lieut. Johansen. By Dr. Fridtjof Nansen, with an Appendix by Otto Sverdrup, Captain of the "Fram," about 120 Full-page and Numerous Text Illustrations, 16 Colored Plates in Fac-simile from Dr. Nansen's Own Sketches, Etched Portrait, Photogravures, and 4 Maps. In Two Volumes. 8vo. New York, 1897.

Nansen is a fortunate man, who deserves his fortune. His crossing of Greenland brought him to a foremost place among explorers, and his voyage in the *Fram* has won for him the glory, which is the least evanescent of all earthly rewards. The beginning and the end of that voyage will not cease to stir the imagination—the passing of the ship into the frozen sea, where it was lost for three years, and the sudden return, which came to every man like an event in his own life. Something has been added to our knowledge of the far North, but the main result of the voyage is the story of a heroic venture, grandly conceived and carried on to the verge of ideal success. Nansen and his comrades have done things worthy to be recorded, and he has told them in a book worthy to be read; and it has been read by all the world. The style is direct and simple and the story moves on without effort, a living picture of the days in the drifting ship. What most impresses the reader is the perfect harmony that prevailed among these men, shut up perforce in the icy desert. There is no hint of dissension, no jarring, no jealousy; nothing but cheerfulness and good humor and serenity. These were picked men, like a band of brothers, and uncommon brothers at that. There was always something to do, for no man can well be idle on board ship, and work is a great help to practical morality; but the peaceful atmosphere of the *Fram* is none the less a surprise to those familiar with stories of the Arctic.

Not even when Nansen explained to the whole ship's company, in November, 1894, his purpose to leave the *Fram* early in the coming spring, to make his way with one companion over the ice towards the Pole, was there any murmur of discontent. Every

one did his part in making the preparations for this journey, which Gen. Greely has called the

single blemish that mars the otherwise magnificent career of Nansen, who deliberately quitted his comrades on the ice-beset ship hundreds of miles from any known land, with the intention of not returning. . . .

In his Introduction, Nansen quotes these and other severe remarks of Gen. Greely's without comment or answer. It is well to remember that if Nansen deliberately quitted his comrades it was not in order to take his ease in comfortable quarters. The fifteen months spent by him and Johansen in their sledge journey in the unknown sea were months of anxiety and strain, and often of imminent danger. To have made that journey and to have found their way back to life is distinction enough for two men.

The 400 pages devoted to the story of their experience have a more personal interest than the rest of the book. It is a tramp for life over the ice-floor resting on the sea; now stopped by an open lane, now hauling the sledges over the hummocky ice with the help of the worn-out dogs, now sinking, snow-shoes in all, in the softening snow. They were often in peril from the bears on the ice and the walruses in the water, and their ammunition ran low towards the end of the march. Ten days before they reached Franz Josef Land they narrowly escaped death in its worst form. They had moored their kayaks by a bit of raw hide to the ice, while they climbed a hummock to get a view over the water. They had reached the top, when Johansen saw the kayaks adrift before the wind, blowing off the ice. They rushed down, Nansen threw off some of his clothes and sprang into the ice-cold water, to overtake the drifting boats, which held everything they possessed. Benumbed and stiff, Nansen turned and floated, and then he could see Johansen walking restlessly and helplessly up and down on the ice. When at last the kayak was reached, it was only by a supreme effort that Nansen swung one leg to the deck and crawled on board. If he had failed to reach the boat! This was the last of their trials, and a few days later they were enjoying Jackson's hospitality in Franz Joseph Land.

Aside from its value as the record of a memorable voyage, Nansen's book will live in literature. No one has better rendered than he the strange beauty, the sublimity, the utter desolation of the Polar solitudes, where the thoughts of home are lost in the sense of the nothingness of life.

The publishers have done excellent work, though the volumes

are somewhat heavy. Only one serious error has been noted (Vol. II, p. 305) in the line:

Saturday, July 6th. $+ 3.38^{\circ}$ Fahr. ($+ 1^{\circ}$ C.). Rain.

Rain could not fall with a temperature of 3.38° Fahr. The figures should read 33.80° , the equivalent of $+ 1^{\circ}$ Centigrade.

The illustrations are all good, and the colored sketches, for which the author offers an apology, are very striking.

The Dedication calls for remark. It reads:

To Her who christened the ship and had the courage to remain behind.

Few as the words are, they compel every one acquainted with the recent history of exploration in Greenland to read in them an unworthy insinuation. There are, no doubt, many kinds of courage, moral and physical, and the least admirable of all is the courage to do what self-respect and courtesy forbid.

Glaciers of North America. A reading lesson for students of geography and geology, by Israel C. Russell, Ginn & Company, 1897, pages VIII+210.

We are very glad to welcome this book, a companion volume to the author's "Lakes of North America," which has been so favorably received, and his "Volcanoes of North America," soon to appear. We are very glad to have an increasing number of simply worded, scientific, and interesting descriptions of the geographic phenomena of our country for the particular use of the lay reader. "The Glaciers of North America" is most readable, most excellently prepared, and in every way a book to be recommended to those who would become familiar with the phenomena of glaciation and keep their minds free from misconceptions regarding controverted points of the science. We doubt, however, if the book is quite simple enough or quite as well illustrated as it should be, if it would appeal to the common school teacher who needs to know much of our natural phenomena, but knows not where to get it. For the student with some training in geography and with the ability to read scientific English, this book will be a very great help.

In the introduction the author considers the types of glaciers and their constructive and destructive work. The chapter should be read by all elementary students of glaciation, for it is simple, direct, and clear. It would have been much better, however, had it been more largely illustrated. The remaining chapters of

the book are as follows: Distribution of Glaciers in North America, Glaciers of the Sierra Nevada, Glaciers of Northern California and Cascade Mountains, Glaciers of Canada, Glaciers of Alaska, Glaciers in the Greenland Region, Climatic Changes Indicated by the Glaciers of North America, How and Why Glaciers Move, The Life History of a Glacier. As one would readily expect, more stress is laid upon the glaciers of the region in which Prof. Russell has done most of his field work; consequently the chapter on the glaciers of Alaska is the longest and that on the glaciers of Canada the shortest. It is to be regretted that the author did not include more in his consideration of the glaciers of the Selkirks, which are now of such interest to us through the labors of certain members of the Appalachian Mountain Club and others. We miss in the account of the glaciers of Alaska those graceful bits of description which we had hoped to find because of Prof. Russell's many dangerous experiences and courageous undertakings in the St. Elias Alps, and which had pleased us so much in some parts of his former book, "The Lakes of North America." One of the most suggestive chapters and one which is certainly most broadening to the mind is that on the life history of a glacier, which makes a very fitting conclusion to this excellent reader.

We regret that the book was delayed so long in the press that it seems to be not quite up to date on its appearance, containing as it does no reference to the results attained by Prof. Salisbury in Greenland and by others since. The book should be in the library of every one interested in natural phenomena, of the student, naturalist, or traveler, and we heartily commend it to our readers.

R. E. D.

The Physical Features of Missouri. By Curtis Fletcher Marbut. (Report of the Missouri Geological Survey, Vol. X, 1896.)

The paper upon the physical features of Missouri, just issued by the Missouri Geological Survey, is a very valuable contribution to the science of physiography and makes a step of progress that we hope many other States will soon follow. We have had many scientific treatises upon physiographic subjects, but this is the first time, so far as we know, that a State has been analyzed from the standpoint of the modern science of physiography for the understanding of the people. We are very glad to know, however, that already some other States are planning to issue similar reports.

Mr. Marbut's paper opens in an interesting way with a few para-

graphs showing the historical progress of colonization in Missouri and the way that the colonization was influenced by the physical features. He then divides the States separately and takes up each part in succession. He first treats of the uplands interrupted by the lowland depressions of existing streams along the strikes of the rocks. He divides the uplands into two parts according to topography, the *Prairie* region and the *Ozark* region. The *Prairie* region is but the eastward extent of the plains to be seen in east Kansas, and the topography is familiar. The *Ozark* region is a broad, comparatively even upland, sloping from a central, southwest-northeast axis, of which the elevation is by succession of steps.

Following this introduction the author considers in some detail the region of the upland and the age of the peneplain which is to be seen crossing the State. He divides the topography into step and platform features, the steps being the various escarpments and the platforms the various lowlands formed by the stripping of the back of the strata. Between one escarpment and the next, facing the centre of the region and arranged concentrically outward, we find several escarpments: First, the *Avon*, formed in Cambrian age; the *Potosi*, to the west of the above, but not very clear; the *Crystal*, outside of the *Avon* escarpment, the hard layer being a magnesian limestone. This latter is most pronounced along the *Missouri River*. The principal escarpment of the State is the *Burlington* one, formed in the *Burlington limestone*, encircling the *Ozark dome*, except in the southeast. It is 200 feet above the lowland and it fades out to the north. In central Missouri is seen the *Henrietta* escarpment, formed in the limestone of that name of the *Lower Coal Measures*. Owing to the character of the rocks, the slopes are not too steep for pasturage. In northwest Missouri is the *Bethany* escarpment, which is the divide between the *Osage* and *Missouri rivers*. This escarpment continues north through *Iowa* to the *Cretaceous Rocks*, and in the other direction through *Kansas* to *Oklahoma*.

Of the platforms to be seen associated with the escarpments we have the *Jonca* inside the *Avon* escarpment, with a radial drainage and with granite knobs projecting through the sandstone and limestone, and thus bringing to view a stripped old land surface. Between the *Avon* and *Potosi* escarpments we find the *Summit* platform, much dissected by streams and including the greater part of the central *Ozark* region. This passes gradually into the *Salem* platform. The *Salem* platform is a part of the *Ozark dome* and dips away from it. It is an area little intersected which goes beneath

the Tertiary lowland. The streams have cut steep-sided valleys and uncovered hills of the old peneplain. Above the Crystal and below the Burlington escarpments we find the deeply dissected areas of the Zell platform. Outside of the Burlington escarpment is the Barton platform, the best physical province in the State. Its surface is the upper surface of the resistant Lower Carboniferous limestone, and it may be a restored Pre-Coal Measure peneplain tilted to the west. The drainage is transverse. In the north the area is slightly modified by drift; in the east it dips beneath the Mississippi flood-plain. Associated with this platform in the southwest we find the Nevada lowland formed in soft shales, distinctly an old age region. Below the Bethany limestone we find the Warrensburg platform much modified by ice-laid and water-laid drift. It is a region of low relief, higher to the southward on account of the dip of the rocks and slope of the drainage. Northwest of the Bethany escarpment is the Gentry platform. The Missouri River runs 300 feet below the Lathrop plain, which is a part of the platform.

Beside the platforms and escarpments we have the Tertiary lowland on the southwest of the border of the State, running from the Ozark region into other States. It is a much eroded plain, interrupted by the now famous Crowley's Ridge. The lowland to the west, which is a subsequent lowland, has Long Island Sound for its homologue. The streams follow this lowland.

In considering the drainage Mr. Marbut believes that the upper Mississippi probably assumed its present course about the close of the Cretaceous time, and that the Missouri has a drainage consequent upon the slope given from the Rocky Mountains eastward in the Tertiary. He discusses the consequent and modified drainage of the Ozark region, and gives a very interesting account of the streams in the southeast part of the State superposed upon local hard rocks and producing young valleys, locally known as Shut-ins. He then discusses the character of the valleys of the Ozark and Prairie regions in a broad way and treats of the flood-plain and upper meanders, discussing the form fully and mentioning the differences of opinion of Messrs. Winslow and Davis in regard to the latter.

The report is illustrated by several beautiful full-page cuts, bringing out the character of the uplands and lowlands; and by two double-page maps showing the drainage and the physiographic belts; also by several smaller figures and maps, well suited to their purpose.

If the paper had been a little more simple in its treatment, the

public would have found it much more interesting reading, but it is a step in the right direction, and meets with great commendation. Mr. Marbut has done well in showing so many relations between man and his development and progress, and the physical features of the region. The paper stands as one of the best physiographic products of the last year.

R. E. D.

State Map of New York as an Aid to the Study of Geography. By William Morris Davis. Examination Bulletin No. 11, University of the State of New York, 1896. Price, 5 cents.

The small pamphlet of something over twenty pages, recently published by the University of the State of New York, under the title mentioned above, will be an excellent guide and of great help to the teacher of geography in the New York Common Schools. It is a companion one to those previously issued by the same author, on the State Maps of Rhode Island and Massachusetts, but not so directly helpful, because New York State is unfortunately not so well supplied with good maps as are the other States mentioned.

The paper is written upon the well-known basis that home geography should precede that of regions abroad, and that the home region should be the unit of comparison in all descriptive and locative work.

The pamphlet opens with an account of the topographic map now being slowly issued by the State and the U. S. Geological Survey. Then follow paragraphs describing the areal features of the State; then classification and something of their origin. The following is the order of their treatment: Mountains, highlands and uplands; ridges, plateaux and uplands; escarpments; hills; lowlands and plains; valleys; forms of glacial origin; flood plains; terraces; estuarine plains; delta plains; swamps, marshes and lacustrine plains; brooks and rivers; divides; ponds and lakes; rapids and falls; chasms, glens and gorges; features of lake and sea coast. The writer then takes up the relations of these features according to origin, the relations of surface features to man, and some suggestions regarding the apportionment of map work to the different years of the school course.

The wide-awake teacher will find this paper very helpful, but to the teacher whose mind has never been trained to the modern view of geographic classification, the pamphlet will be anything but wholly clear. Certain terms familiar to the modern student are

used without sufficient explanation to be perfectly clear to every reader. The author would more thoroughly have won the confidence of the audience to which he would appeal, if he had incorporated in his introduction more of the relation of physical features to man. We fear that the average teacher with no map to guide him may be frightened from the feast by the somewhat assertive way in which the suggestions are offered.

The publication deserves, however, to be in every school for constant reference, and we regret that the State has not yet published a map as good as this description of the earth features, based upon the map that ought to be.

R. E. D.

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ACCESSIONS TO THE LIBRARY.

APRIL-JUNE, 1897.

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THE CULLUM GEOGRAPHICAL MEDAL.



Presented to Civil Engineer R. E. PEARY, U. S. N., at the Annual Meeting of the American Geographical Society, January 12, 1897.

Design by MISS LYDIA FIELD EMMET. Die sunk by VICTOR D. BRENNER.

TRANSACTIONS OF THE SOCIETY.

APRIL, 1897.

A Regular Meeting of the Society was held at Chickering Hall Monday, April 12, 1897, at 8.30 o'clock P.M.

Vice-President Viele in the chair.

The following persons, approved by the Council, were elected Fellows:

Morris Lee King, M.D.,

E. B. Lewis,

F. H. Newell, Washington, D. C.,

Myles Standish.

Mr. Anton A. Raven read the following proposed amendments to the By-Laws:

CHAPTER III.

After paragraph 2 insert a new paragraph, as follows:

3. No one shall be voted for, for any office, unless he has been nominated by the Council, or unless his nomination, made in writing by at least nine Fellows of the Society, has been conspicuously posted in the office of the Society for ten days prior to the date of the Annual election.

The paragraphs now numbered 3, 4 and 5 to be numbered 4, 5 and 6 respectively.

CHAPTER IX.

Paragraph 2.—Add the following: In case of a contest, he may declare the election postponed to the next meeting, in order that a corrected poll list may be prepared by the Secretary and verified by the Council; but only one such postponement shall be made.

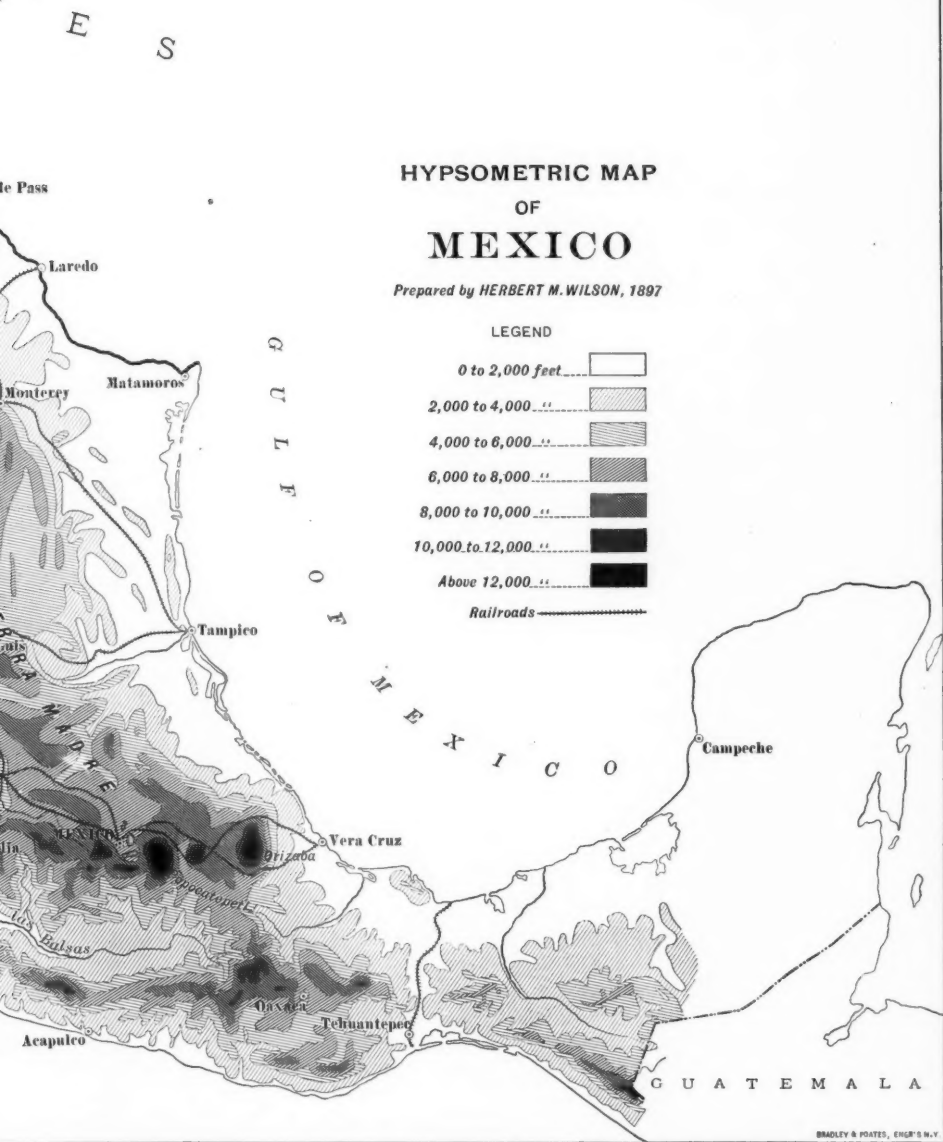
The Chairman then introduced Prof. Chas. E. Fay, who addressed the Society on the Peaks and Glaciers of the Canadian Rocky Mountains.

On motion, the Society adjourned.

At a meeting of the Council, held on the 3d of April, 1897, it was unanimously voted that "the Cullum Geographical Medal be awarded to Dr Fridtjof Nansen, in recognition of the geographic explorations made by him in the *Fram* and in his sledge journey over a hitherto unknown sea to the highest point of latitude yet reached by man."







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